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Fada	7C42, 7C52 Tel. Rec.	179-5
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Jackson	255	179-7
Kaye-Halbert	Ch. 253DX Prod. Chg. Bul. 45	179-1
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3924 MEADE ST.
DENVER, COLORADO

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 170

KAYE-HALBERT CHASSIS 253DX

Realignment of Kaye-Halbert Chassis 253DX may be necessary for use in strong signal areas.

The following procedure should be followed:

1. Parallel a 1.5MMF capacitor across L9 coupling coil.

   This coil is in series with grid of 1st. IF Amp., 6BC6 V-3. This addition is only applicable in chassis using a fixed coil L9.

2. Replace R24, 18KΩ ½ watt.

3. Realign IF coil as in chassis 253.

   Tuner IF 24.2
   Variable 21.4
   1st. IF 21.8
   2nd. IF 24.3
   3rd. IF 23.4

   Readjust IF coils slightly if necessary for correct curve per Fig. 1 Photofact Folder 9, Set 170.

4. The adjacent channel trap located on the IF coil are aligned at the factory for 26.5MC and should not require adjustment.

KAYE-HALBERT CHASSIS 253DX

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 15 IN SET 167

Model H-681T17 (Ch. V-2215-1)

Westinghouse Model H-681T17, Ch. V-2215-1 is similar to Model H-678K17 Ch. V-2216-2. Part changes are as follows:

NEW PART NO.	DESCRIPTION	FUNCTION
V-9877-1	Control 500,000 ohms	Volume
V-9877-1	Control 1500 ohms	Picture
V-9916	Control 50,000 ohms	Brightness
V-10509-1	Control 125,000 ohms	Horiz. Hold
V-10911-1	Yoke Assy. (Contains V-10538-1 Deflection Yoke)	Deflection

WESTINGHOUSE MODEL H-681T17 (Ch. V-2215-1)

Chassis V-2216-1, and V-2216-2

The following changes were included in the later production of Westinghouse Models H-678K17 and H-679K17 using Chassis V-2216-1 and V-2216-2.

FOCUS CONTROL

For better control of the focus, the focus voltage divider network (R45, R46, R47 and R48) was removed and a potentiometer is used in their place. The total fixed resistance of the potentiometer (2 meg ohms) is connected between pin #10 of CRT (V-22) and ground, and the arm of the control is connected to pin #6 of the CRT.

VERTICAL HOLD CONTROL

To provide greater control range, the vertical hold control (R4) is changed to 750K.

INTEGRATIONS NETWORK

A new intergrating network designated V-11192-1 is used in later production. This network includes the .01MFD capacitor and 47KΩ resistor which was added in Photofact Prod. Chg. Bul. 40. If the new network is installed in a chassis that contains .01MFD capacitor and 47KΩ resistor, they should be removed because they are built in the new network. The connection number on the new network differs from those of the original. Connection #1 goes to the junction of R81 and R82 #2 goes to ground, #3 goes to the grid of V15 (pin #1).

WESTINGHOUSE MODELS H-678K17, H-679K17 (Ch. V-2216-1, 2)

CONTINUED ON REVERSE SIDE

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6AU5GT SCREEN GRID DISSIPATION

To reduce power dissipation on the screen grid of the 6AU5GT (horiz. output) two methods were employed. A 56KΩ resistor is added between pin #8 (screen grid) of the 6AU5GT and ground, In the latest production, however, R95 was changed to 12KΩ and 56KΩ resistor mention above was not used .

SOUND SIGNAL NOISE RATIO

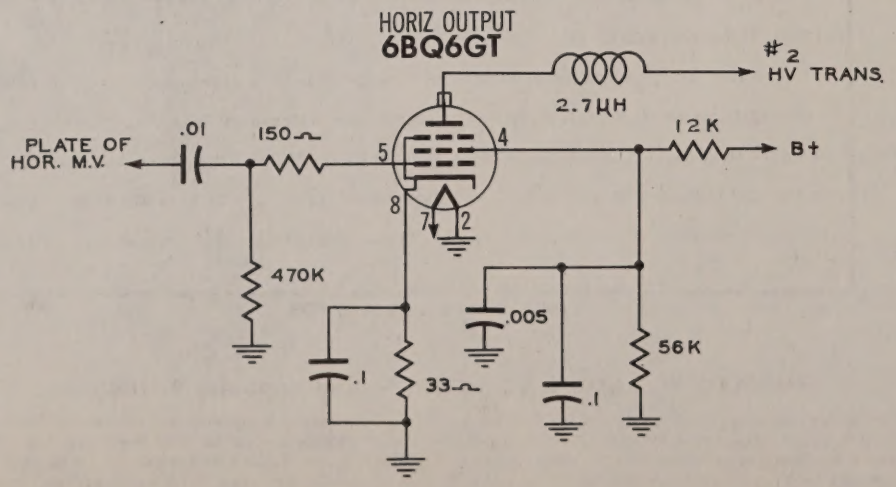
To improve the sound signal to noise ratio, the coils in the grid and plate circuit of the lst. Sound IF amp. (L32 and L33) are changed to part #V-9882-5, C6l connect across L33 as was changed to 150MMF and a 150MMF capacitor is added across L32.

PICTURE INTERFERENCE

An effect similar to ignition noise on the picture can be caused by radiation of RF energy from the audio output circut. When this occurs, the effect is present at all times rather than intermittantly as is the case with ignition noise. It can be eliminated in some cases by replacing the audio output tube. To eliminate the possible occurrence of the effect in later production, A2200 ohm resistor is connected in series with the screen grid (pin #4) of the 6W6GT audio output tube at the tube socket, and a 680MMF capacitor is connected in series between the invoice feedback resistor (R67) and the plate of the tube 6W6GT.

6BQ6GT HORIZONTAL OUTPUT

A 6BQ6GT horizontal output tube is used in some chassis. A schematic of the circuit is shown below.



AIRCASTLE MODEL 610.P-651.1

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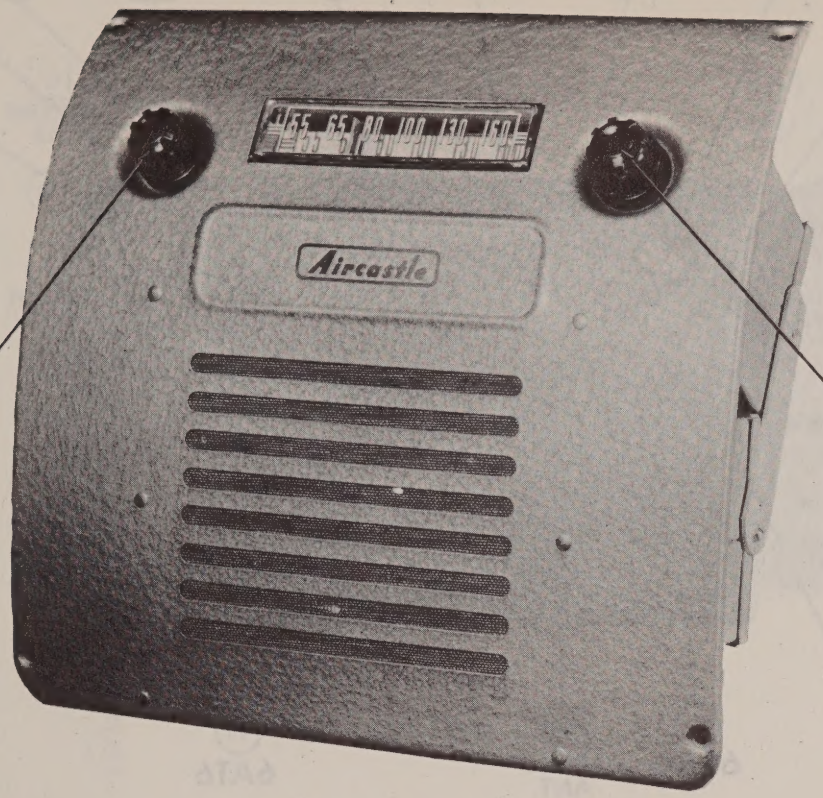
AIRCASTLE
MODEL 610.P-651.1



TUNING CONTROL

VOLUME CONTROL ON-OFF SW

AIRCASTLE
MODEL 610.P-651.1

TRADE NAME	Aircastle Model 610.P-651.1 (For 1951/1952 Plymouth Automobiles)
SUPPLIER	Spiegel Inc., 1061 W. 35th. St., Chicago, Ill.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 or 6AV6 Det.-AVC-AF Amp., 6V6GT or 6AQ5 Audio Output, 6X5GT or 6X4 Rectifier.
POWER SUPPLY	6 Volt Storage Battery RATING 5.6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the tuning gang fully open and set the right hand edge of the pointer saddle 1/4 inch from the right hand end of the dial back plate.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400 ~ mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	100MMF	High side to antenna terminal. Low side to chassis.	1600KC	"	"	A5	"
3.	"	"	1400KC	Tune to 1400KC signal	"	A6, A7	"
4.	"	"	600KC	Tune to 600KC signal.	"	A8, A9, A10	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		AIRCASTLE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4A	Det.-AVC-AF Amp.	6AT6	6AT6	7BT	
B	Det.-AVC-AF Amp.	6AV6	6AV6	7BT	
V5A	Audio Output	6V6GT	6V6GT	7S	
B	Audio Output	6AQ5	6AQ5	7BZ	
V6A	Rectifier	6X5GT	6X5GT	6S	
B	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	20	350	CE-86	AFH3-107		UP2235C			TVL-3678	
B	20	350								
C	20	25								
C2	.05	200	C207	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.05	200	C207	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	.05	200	C207	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5	100		CC200	SI100	D6-101	TM5T1	GP1K-101	UC-535	5GA-T1	
C6	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	Note 1
C7	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 2
C8	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	Note 1
C9	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C10	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C11	.008	1600	C205			PTE16D8		PT1628	MB-D8	
C12	.5	100	C209	P185-5		MP2P5			68P20	
C13	.5	100	C209	P185-5		MP2P5			68P20	

Note 1. Some models use 200MMF in this application (Part #CC201)
Note 2. Some models use .002MFD in this application (Part #C203)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	RV-651	Q13-137	AG-63-Z	B-70-S	U-53	Volume - See Note
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

Note. Some Models use 750KΩ Control (Part #RV-100)

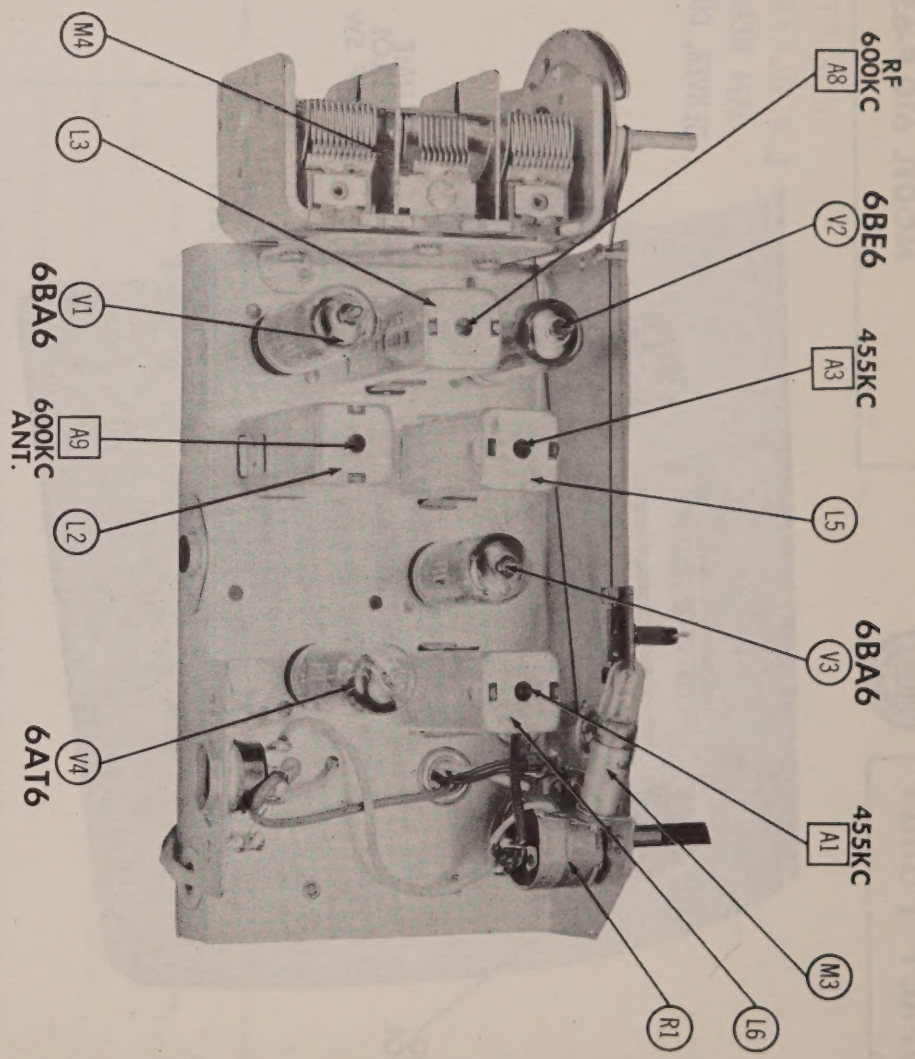
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AIRCASTLE PART No.	IRC PART No.	
R2	1.2Meg	½		BTS-1.2Meg	Note 1
R3	330Ω	½	R303	BTS-330	
R4	20KΩ	½	R306		
R5	1800Ω	½		BTS-1800	Note 2
R6	20KΩ	2	R313		
R7	2Meg	½	R310		
R8	8.2Meg	½		BTS-8.2Meg	Note 3

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	
R9	250KΩ	½	R307		
R10	560KΩ	½		BTS-560K	Note 4
R11	330Ω	½	R303	BTS-330	
R12	1000Ω	1	R312	BTA-1000	
R13	100Ω	½	R301	BTS-100	
R14	100Ω	½	R301	BTS-100	

Note 1. Some Models use a 1Meg Resistor in this application.
Note 2. Some Models use a 1500Ω Resistor in this application.
Note 3. Some Models use a 10Meg Resistor in this application.
Note 4. Some Models use a 500KΩ Resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VDC ② 3A	430VCT .046ADC			TV-100		P-2971		V-16K

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	4.5KΩ	3.4Ω	465Ω	.6Ω	Part of Spkr.	A-3856 ①	A-2930 ①	RO- 8 ①	S-6X ①	① Bend mtg. tabs down, file out slots and mount on orig. bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.4Ω	PM-720 PM-705 ①		52A1	

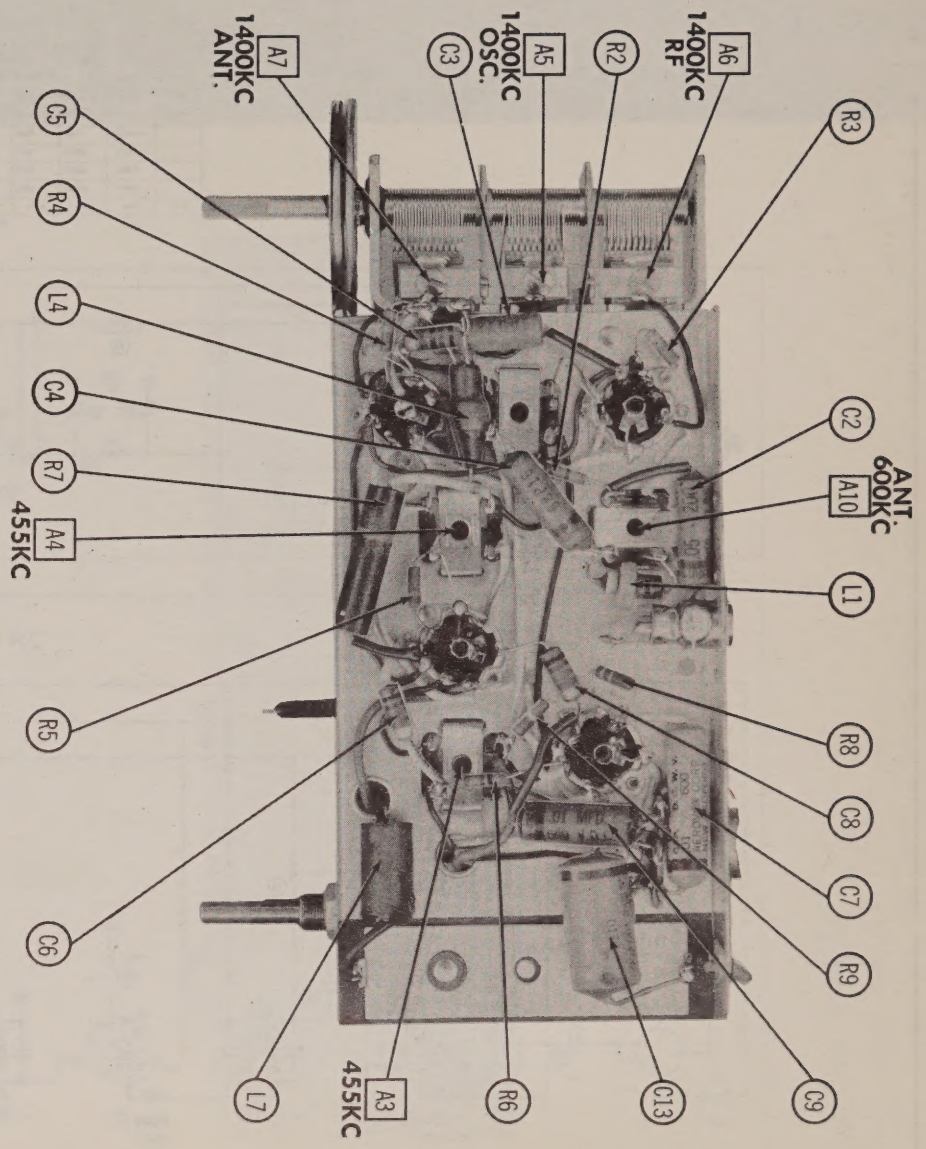
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIRCASTLE PART No.	MERIT PART No.	
L1	Ant. Hash Choke	1.4Ω		L200		Wound on Capacitor
L2	Ant. Coil	14Ω	5Ω	57FB-3		Alternate Part #15053
L3	RF Coil	14Ω	5Ω	57FB-3		Alternate Part #15054
L4	Osc. Coil	8.6		L201		Tap ② .8Ω
L5	Input IF	20Ω	20Ω	1655-16	BC-352	Alternate Part #14977
L6	Output IF	20Ω	20Ω	1655-16	BC-353	Alternate Part #14977 7
L7	Fil. Choke	0Ω		L203		
L8	Hash Choke	0Ω		L202		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				AIRCASTLE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Int.	6.3 VDC	115∿	V-83	5301	859	5301	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AIRCASTLE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	15A. 32V.	A201	A300	311015	155020	AGC15	HDJ-B

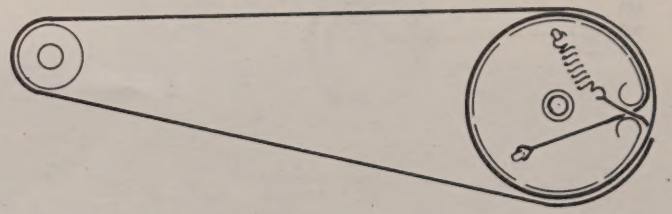
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRCASTLE PART No.		
M3	Bayonet	6.8	.15	Brown	T47		Type No. 47

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M4	3 Gang Var. Cap.	CV-100A	(23-391MMF, 24-387MMF, 35-198MMF)
M5	Spark Plate		
	Dial Scale	D151	
	Dial Pointer	PS151	
	Knob	157	

TUNING GANG FULLY OPEN



DIAL CORD DRIVE

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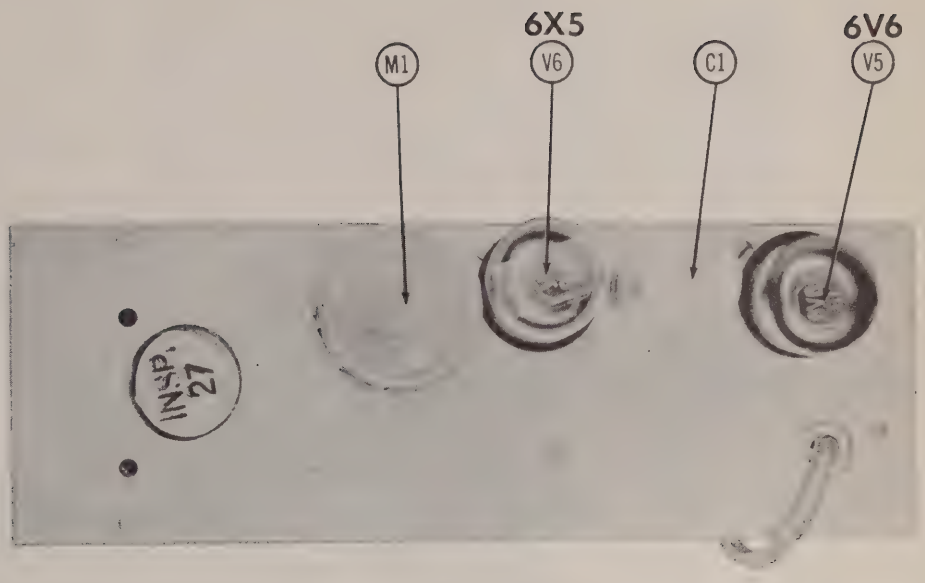

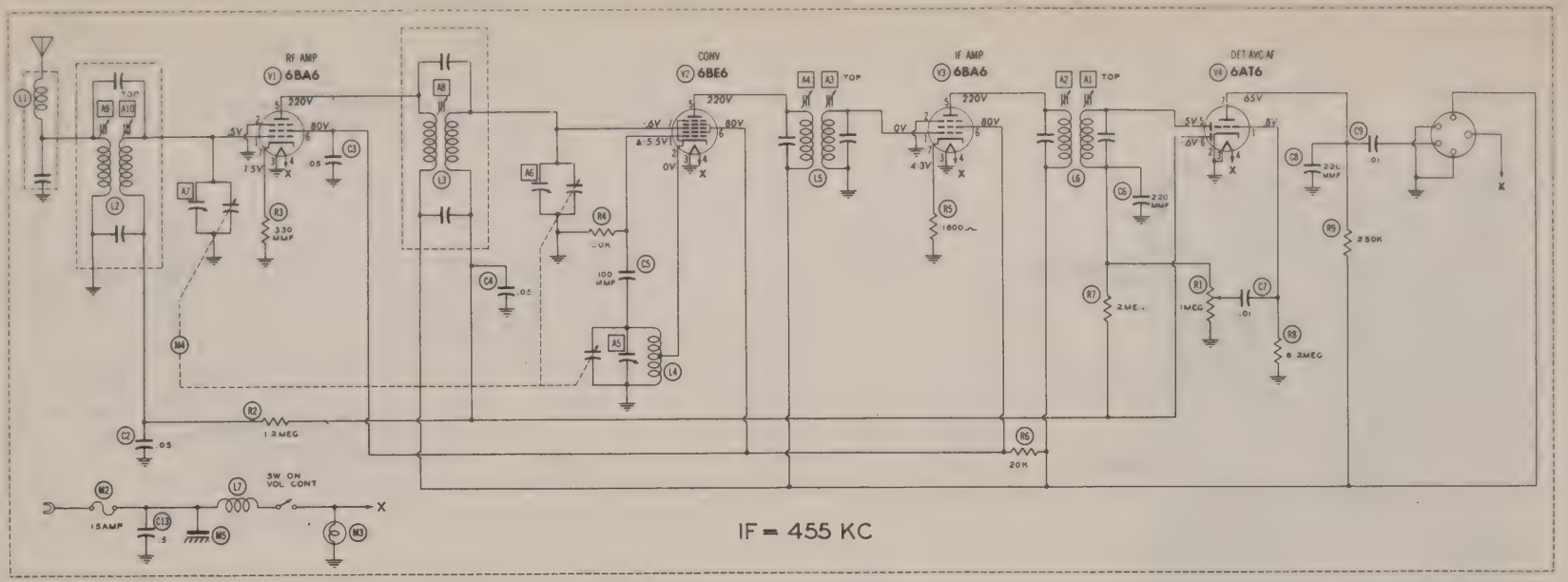

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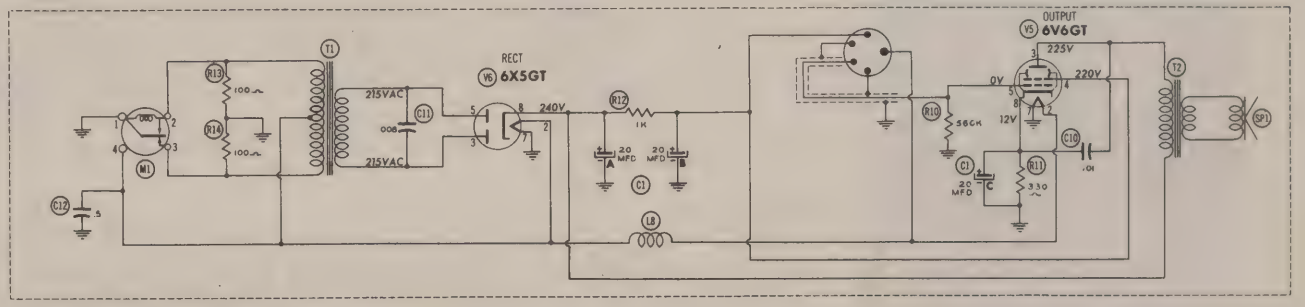

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	4.2Meg	0Ω	0Ω	.4Ω	†1KΩ	†21KΩ	330Ω	
V 2	6BE6	20KΩ	.8Ω	0Ω	.6Ω	†1KΩ	†21KΩ	3Meg	
V 3	6BA6	20Ω	0Ω	0Ω	4Ω	†1KΩ	†21KΩ	1.8KΩ	
V 4	6AT6	8.2Meg	0Ω	0Ω	.4Ω	1Meg	3Meg	†250KΩ	
V 5	6V6GT	INF	.4Ω	†465Ω	†1KΩ	560KΩ	INF	0Ω	330Ω
V 6	6X5GT	INF	.4Ω	225Ω	INF	225Ω	INF	0Ω	60KΩ

† MEASURED FROM PIN 8 OF V6
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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MODEL 5176

ARVIN
MODELS 5175, 5176 (Ch. TE320)

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ARVIN
MODELS 5175, 5176 (Ch. TE320)

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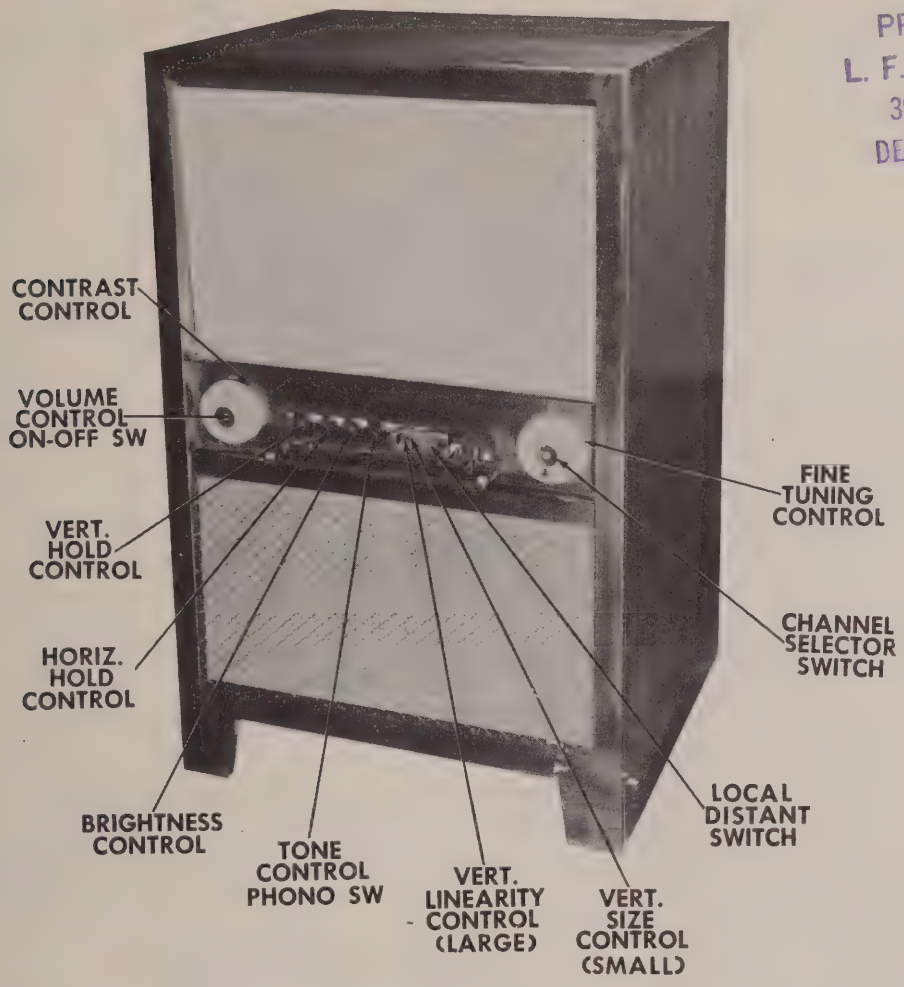

ARVIN
MODELS 5175, 5176 (Ch. TE320)

ARVIN 5176

TRADE NAME	Arvin Models 5175, 5176, (Ch. TE320)
MANUFACTURER	Arvin Industries, Columbus, Indiana
TYPE SET	Television Receiver
TUBES	Twenty-Six
POWER SUPPLY	110-120 Volts AC-60 cycle — RATING 2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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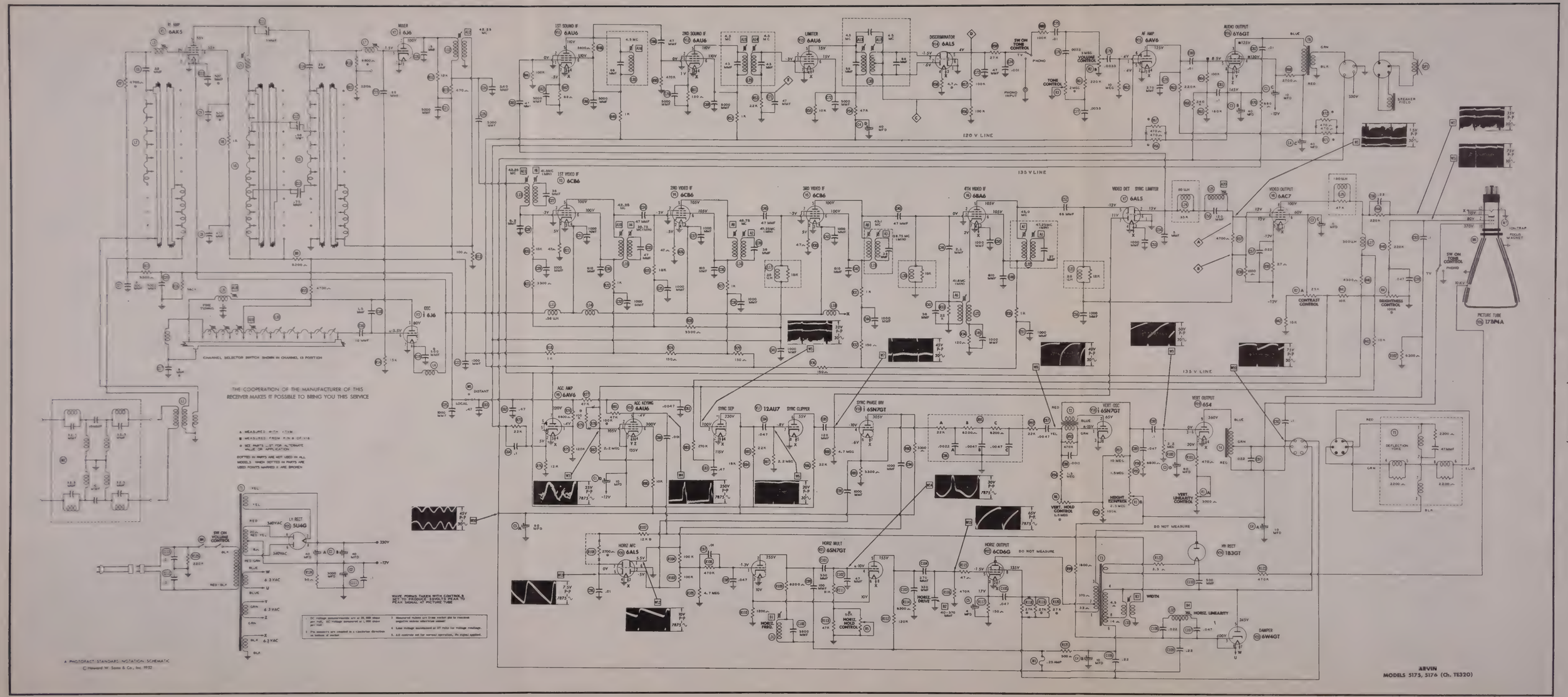
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MIXER V1 6J6
OSC V2 6J6
1ST SOUND IF V11 6AU6
2ND SOUND IF V12 6AU6
LIMITER V13 6AU6
DISCRIMINATOR V14 6AL5
SW ON TONE CONTROL
AF AMP V15 6AV6
AUDIO OUTPUT V16 6Y6GT
SPEAKER FIELD
120 V LINE
135 V LINE
1ST VIDEO IF V5 6CB6
2ND VIDEO IF V6 6CB6
3RD VIDEO IF V7 6CB6
4TH VIDEO IF V8 6BA6
VIDEO DET SYNC LIMITER V17 6AL5
VIDEO OUTPUT V9 6AC7
PICTURE TUBE V26 17BP4A
ION TRAP FOCUS MAGNET
SW ON TONE CONTROL
CONTRAST CONTROL
BRIGHTNESS CONTROL
AGC AMP V19 6AV6
AGC KEYING V18 6AU6
SYNC SEP V17 12AU7
SYNC CLIPPER
SYNC PHASE INV V18 6SN7GT
VERT. OSC V18 6SN7GT
VERT. HOLD CONTROL
HEIGHT
VERT LINEARITY CONTROL
VERT OUTPUT V19 654
DEFLECTION YOKE
HORIZ AFC V20 6AL5
HORIZ MULT V21 6SN7GT
HORIZ OUTPUT V22 6D6G
DO NOT MEASURE
HV RECT V23 1B3GT
WIDTH
HORIZ LINEARITY
DAMPER V24 6W4GT
LV RECT V25 5U4G
SW ON VOLUME CONTROL
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 35 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952
ARVIN
MODELS 5175, 5176 (Ch. TE320)

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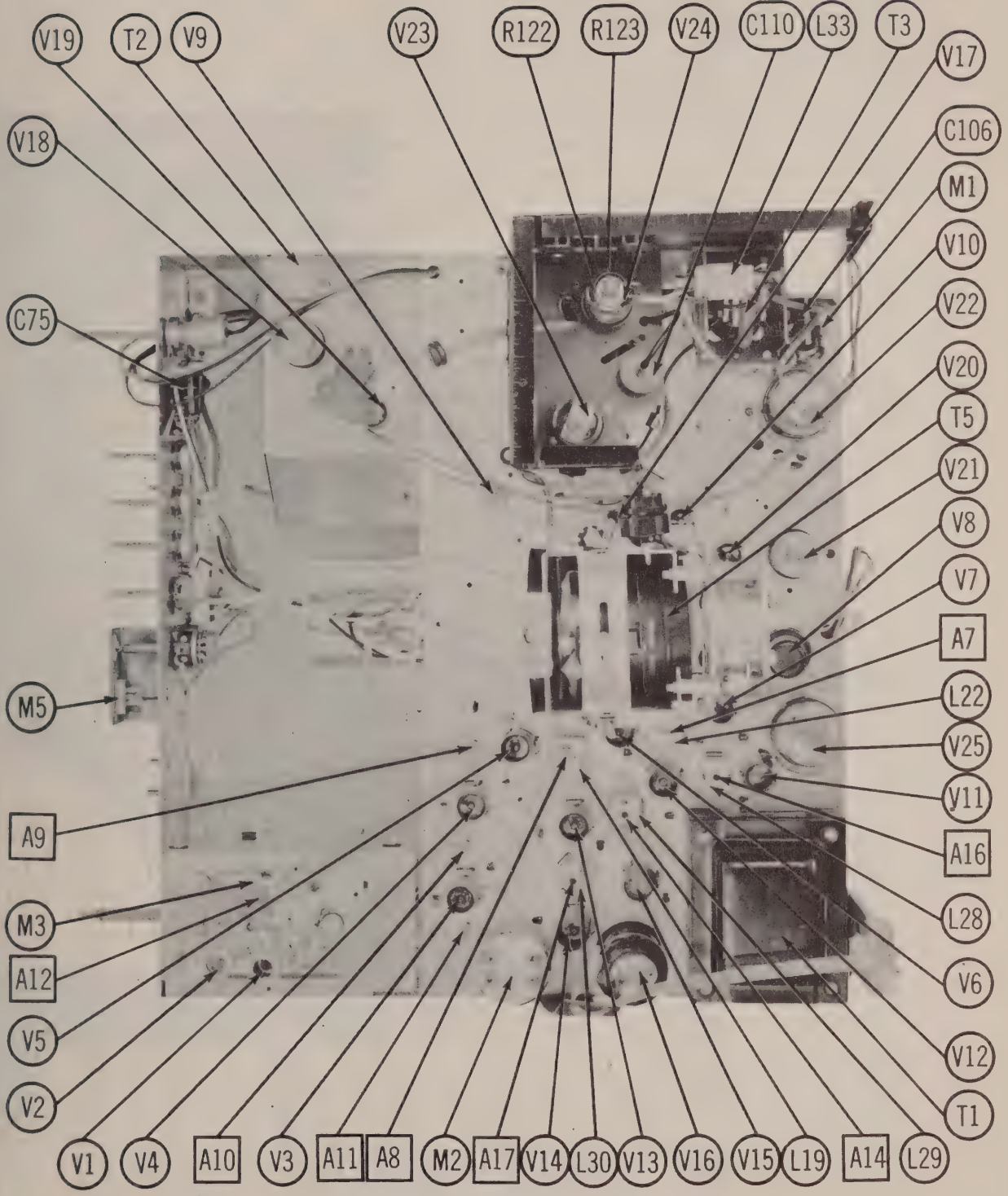
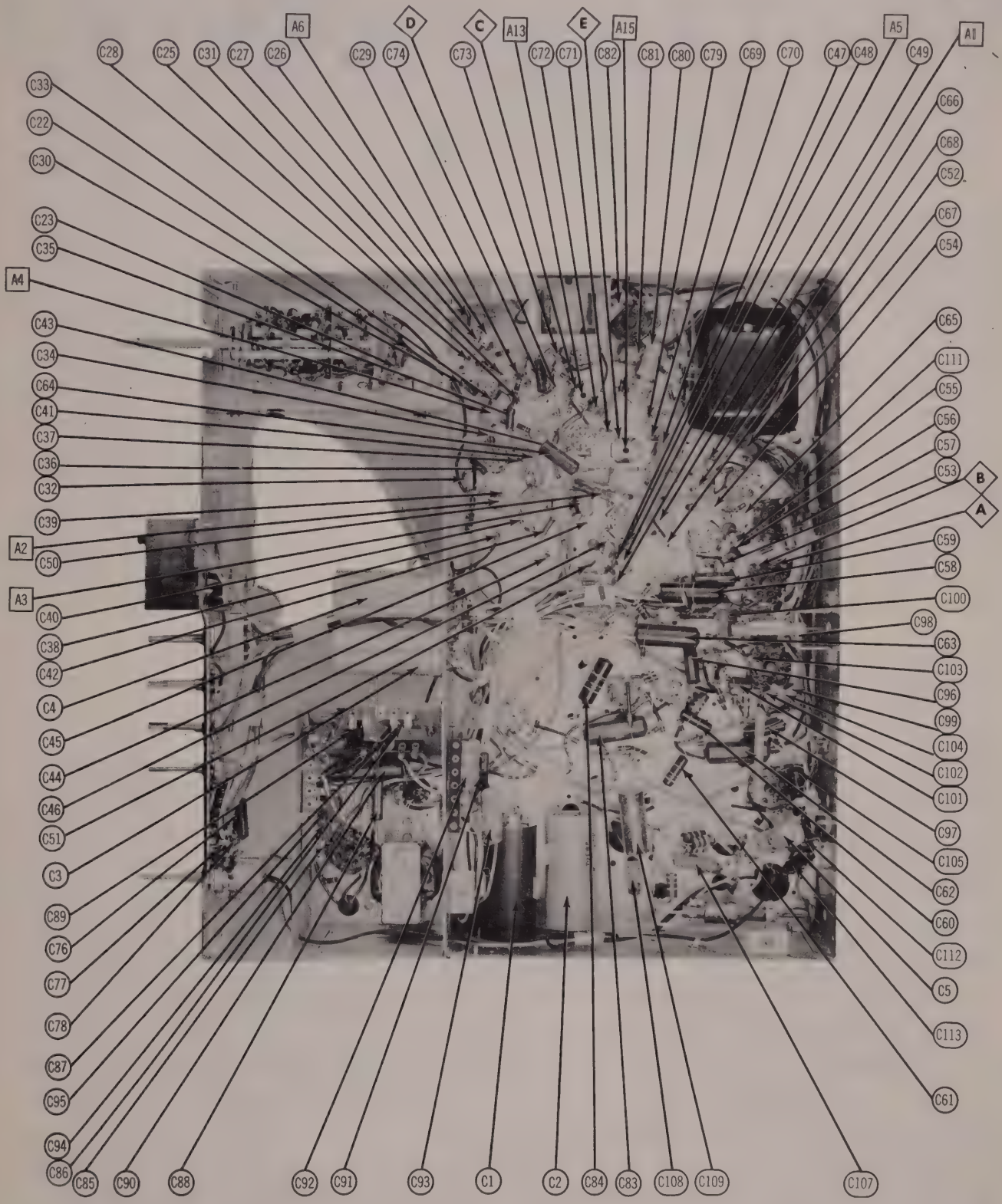
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

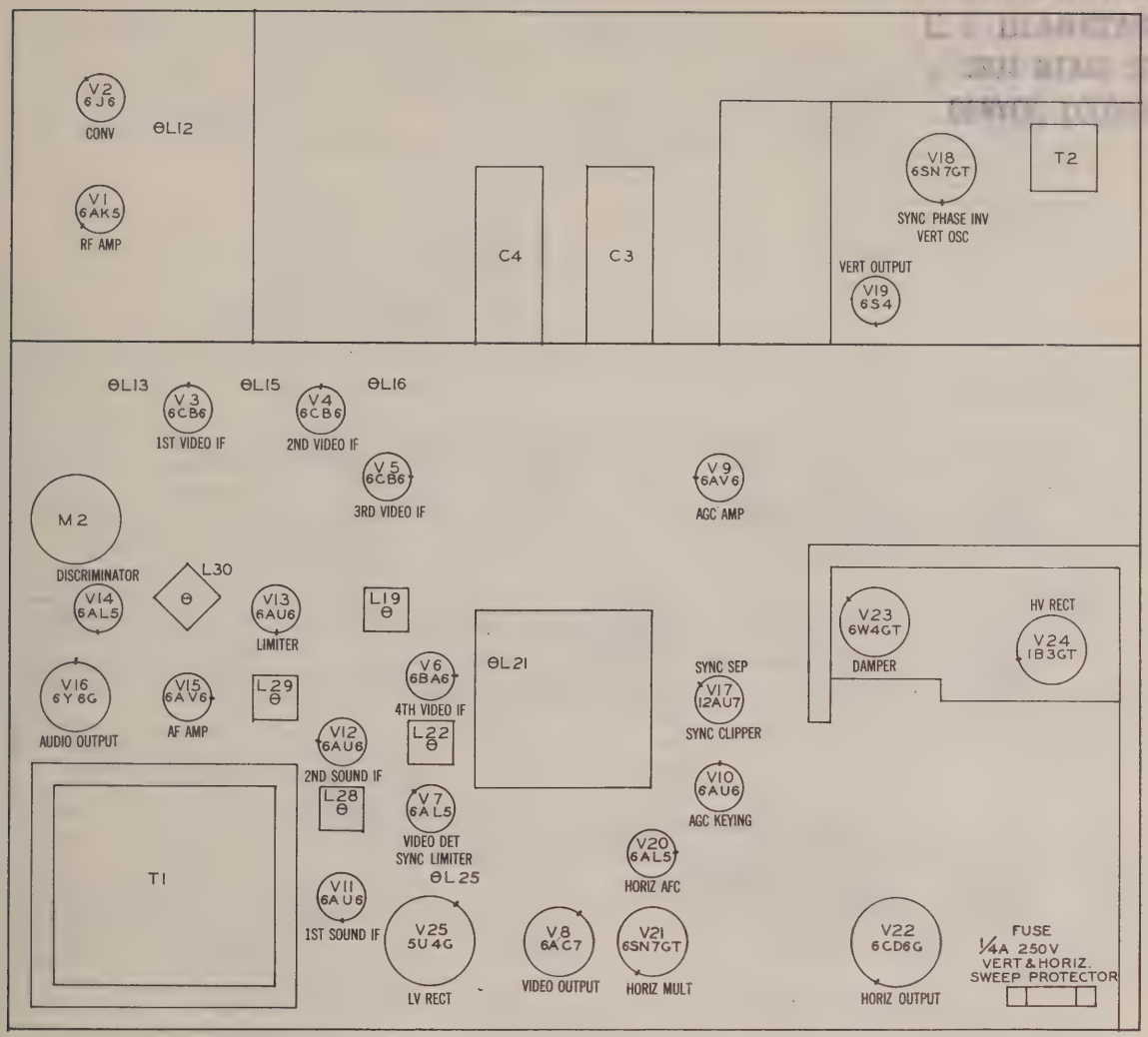


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No Raster, No Sound - V25

LOSS OF PICTURE OR SOUND
No Pic, No Sound, Has Raster - V2, V3, V4, V5, V6, V7, V16
No Pic, No Sound, Has Snow - V1, V2, V3
No Pic, Has Sound, Has Raster - V8, V26
Has Pic, No Sound - V11, V12, V13, V14, V15, V16
Overloaded Picture - V9, V10

SYNC FAILURE
No Vert. Sync. - V18
No Horiz. Sync. - V18, V20, V21
No Vert. or Horiz. Sync. - V17, V18

SWEEP FAILURE
No Raster, Has Sound - V21, V22, V23, V24, V26, Fuse (M1)
No Vertical Deflection - V19
Poor Vert. Linearity or Foldover - V18, V19
Poor Horiz. Linearity or Foldover - V21, V22, V23
Narrow Picture - V21, V22, V23, V24, V25
Vert. Off Freq. - V18
Horiz. Off Freq. - V18, V20, V21

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	47.25MC (Unmod.)	Any	DC probe to point (A). Common to point (B).	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	39.75MC	"	"	A3, A4	"
3.	"	"	41.6MC	"	"	A5, A6	"
4.	"	"	45.MC	"	"	A7	Adjust for maximum deflection.
5.	"	"	43.1MC	"	"	A8	"
6.	"	"	45.75MC	"	"	A9	"
7.	"	"	42.25MC	"	"	A10, A11 A12	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	43.5MC (10MC Swp)	41.6MC 42.25MC 42.75MC 45.MC 45.75MC	Any	Vert. amp. to point (A). Low side to chassis.		Check for response curve as per fig. 1. If necessary retouch A7 thru A12 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001MFD	High side to pin 1 (grid) of 6AU6(V11). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (C). Common to chassis.	A13, A14 A15, A16	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point (D). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.001MFD	High side to pin 1 (grid) of 6AU6 (V3). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. thru 47KΩ to point (D). Low side to chassis.	A17, A13	Adjust A17 so that 4.5MC occurs at center of crossover lines as per fig. 2. Adjust A13 for maximum amplitude and straightness of crossover lines.
10.	"	High side to pin 1 (grid) of 6AU6 (V11). Low side to chassis.	"	"	"	Vert. amp. thru 47KΩ to point (E). Low side to chassis.	A14, A15 A16	Adjust for maximum amplitude and symmetry as per fig. 3.

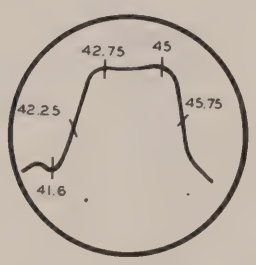


FIG. 1

FIG. 2

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC	13	Vert. amp. to point (A). Low side to chassis.	A18	Adjust to place video marker at 50% on high frequency side of response curve as per fig. 4.
12.	"	"	207MC (10MC Swp)	205.25MC	12	"		Check all high band channels for correct marker placement as in fig. 4. If any channel does not fall within range of the fine tuning control make compromise adjustment of A18 with channel selector set to that channel. Recheck all other high band channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25 MC	11			
			195MC (10MC Swp)	193.25MC	10			
			189MC (10MC Swp)	187.25MC	9			
			183MC (10MC Swp)	181.25MC	8			
			177MC (10MC Swp)	175.25MC	7			
13.	"	"	85MC (10MC Swp)	83.25MC	6	"	A19	Adjust to place video marker at 50% on high frequency side of response curve as per fig. 4.
14.	"	"	79MC (10MC Swp)	77.25MC	5	"		Check all low band channels for correct marker placement as in fig. 4. If any channel does not fall within range of the fine tuning control make compromise adjustment of A19 with channel selector set to that channel. Recheck all other low band channels to see that they have not been seriously affected.
			69MC (10MC Swp)	67.25MC	4			
			63MC (10MC Swp)	61.25MC	3			
			57MC (10MC Swp)	55.25MC	2			

4.5MC TRAP ADJUSTMENT

After alignment turn set on and tune in a TV station. Examine picture for evidence of 4.5MC beat pattern. Adjust A20 for MINIMUM 4.5MC beat on screen.

RF AND MIXER ALIGNMENT

The RF and Mixer portions of this receiver have been properly aligned at the factory and are very stable. Alignment of these portions should not be required in the field.

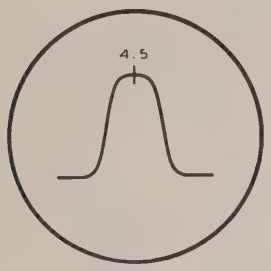


FIG. 3

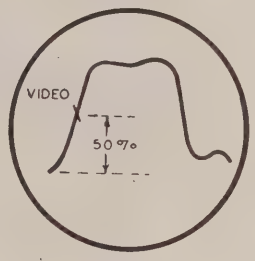
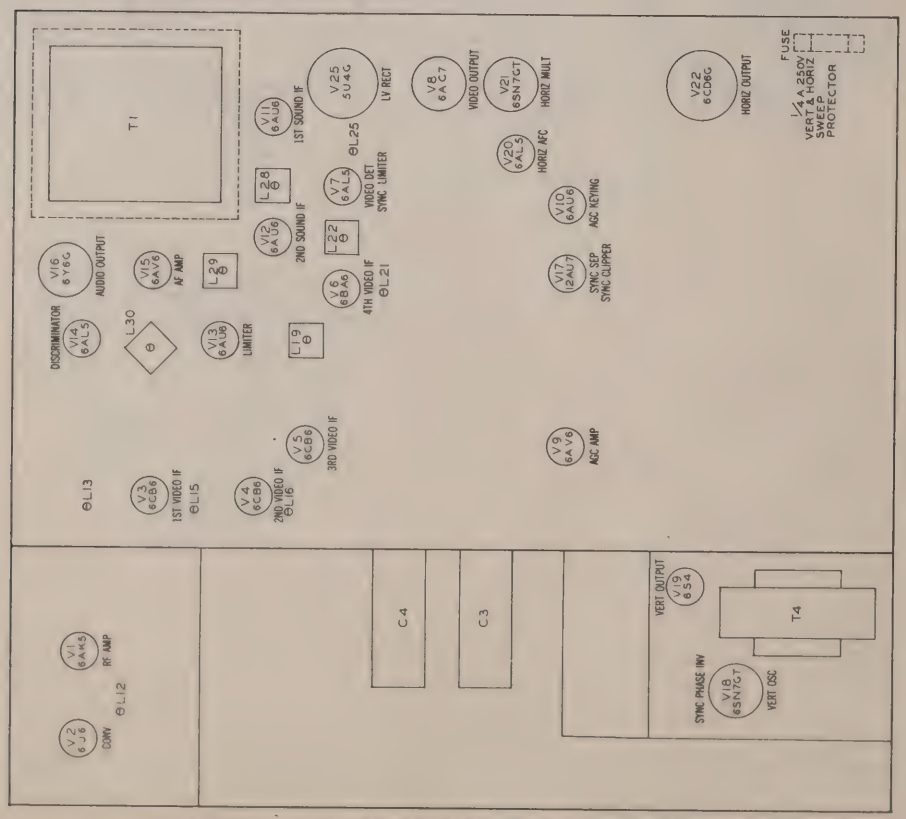


FIG. 4

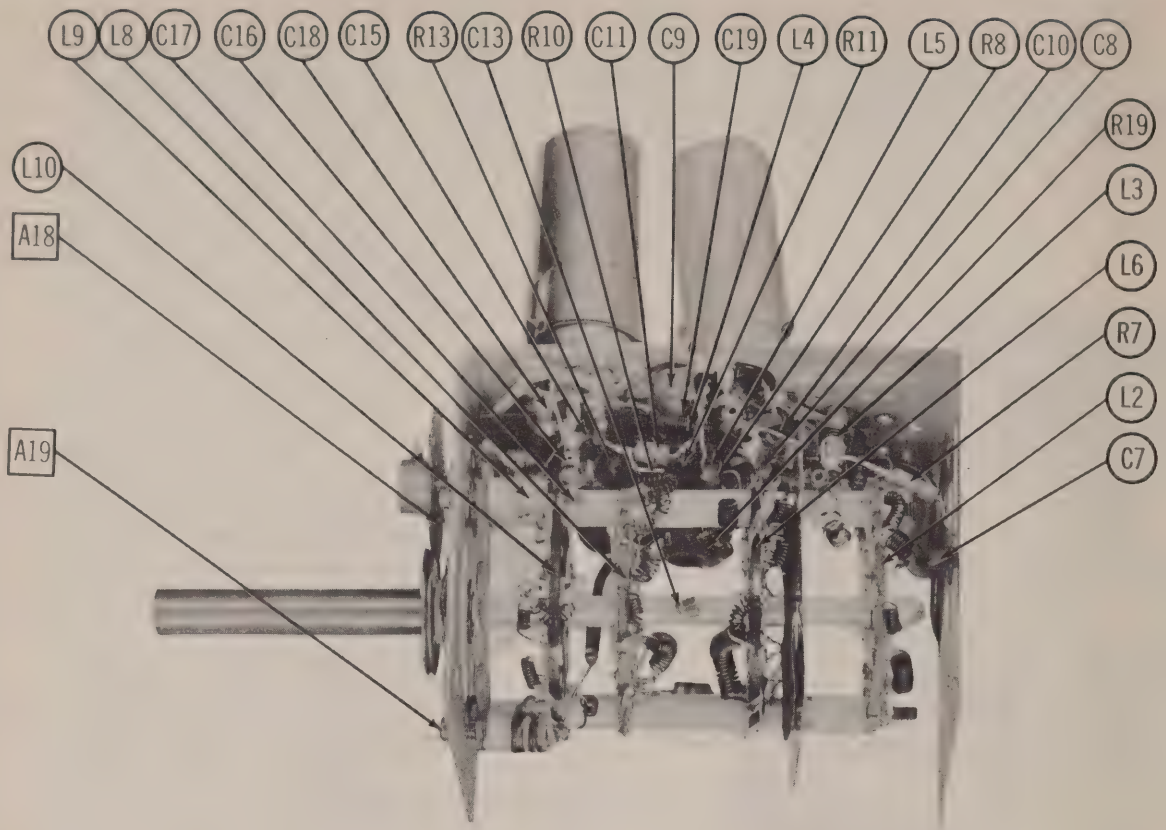
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	135KΩ	0Ω	.1Ω	0Ω	■9.7KΩ	■10.7KΩ	0Ω		
V 2	6J6	■6.2KΩ	■2KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	55KΩ	47Ω	0Ω	.1Ω	■1.5KΩ	■1.5KΩ	0Ω		
V 4	6CB6	55KΩ	47Ω	.1Ω	0Ω	■1.4KΩ	1.4KΩ	0Ω		
V 5	6CB6	34KΩ	47Ω	0Ω	.1Ω	■1.5KΩ	■1.5KΩ	0Ω		
V 6	6BA6	1.6Ω	0Ω	.1Ω	0Ω	■1.4KΩ	■1.4KΩ	120Ω		
V 7	6AL5	0Ω	6.2KΩ	.1Ω	0Ω	1.5KΩ	0Ω	4.7Meg		
V 8	6AC7	0Ω	0Ω	1.5KΩ	6.2KΩ	77Ω	■15KΩ	.1Ω	■5KΩ	
V 9	6AV6	120KΩ	12KΩ	0Ω	.1Ω	INF	INF	■235Ω		
V 10	6AU6	■65KΩ	■680Ω	■0Ω	■.1Ω	220KΩ	†10KΩ	■680Ω		
V 11	6AU6	100KΩ	0Ω	0Ω	.1Ω	■1.2KΩ	■1.2KΩ	68Ω		
V 12	6AU6	470KΩ	0Ω	0Ω	.1Ω	■1.2KΩ	■1.2KΩ	150Ω		
V 13	6AU6	22KΩ	0Ω	.1Ω	0Ω	85KΩ	8.5KΩ	0Ω		
V 14	6AL5	0Ω	100KΩ	.1Ω	1.8Ω	200KΩ	0Ω	100KΩ		
V 15	6AV6	10Meg	0Ω	0Ω	.1Ω	34KΩ	†34KΩ	†220KΩ		
V 16	6Y6G	INF	■.1Ω	†508Ω	†3KΩ	210KΩ	.7Ω	■0Ω	18KΩ	
V 17	12AU7	†15KΩ	■15KΩ	■280KΩ	.1Ω	.1Ω	■22KΩ	2.2Meg	0Ω	0Ω
V 18	6SN7GT	2.2Meg	#2.3Meg	0Ω	4.7Meg	†3.4KΩ	3.3KΩ	.1Ω	0Ω	
V 19	6S4	INF	1.4KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	#3KΩ
V 20	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	15KΩ	0Ω	15KΩ		
V 21	6SN7GT	5.1Meg	†8.3KΩ	1.2KΩ	110KΩ	†120KΩ	1.2KΩ	0Ω	.1Ω	
V 22	6CD6G	INF	0Ω	150Ω	INF	470KΩ	†575Ω	.1Ω	†9.5KΩ	Top Cap #44Ω
V 23	6W4GT	INF	INF	270KΩ	INF	†575Ω	INF	#.2Ω	#0Ω	
V 24	1B3GT	PINS 1-8 HAVE INF RESISTANCE								Top Cap #414Ω
V 25	5U4G	#1.8KΩ	40KΩ	■235Ω	69Ω	50Ω	67Ω	50Ω	40KΩ	
V 26	17BP4A	0Ω	250KΩ	Pin 10 #1.8KΩ	Pin 11 ■230KΩ	Pin 12 .1Ω				

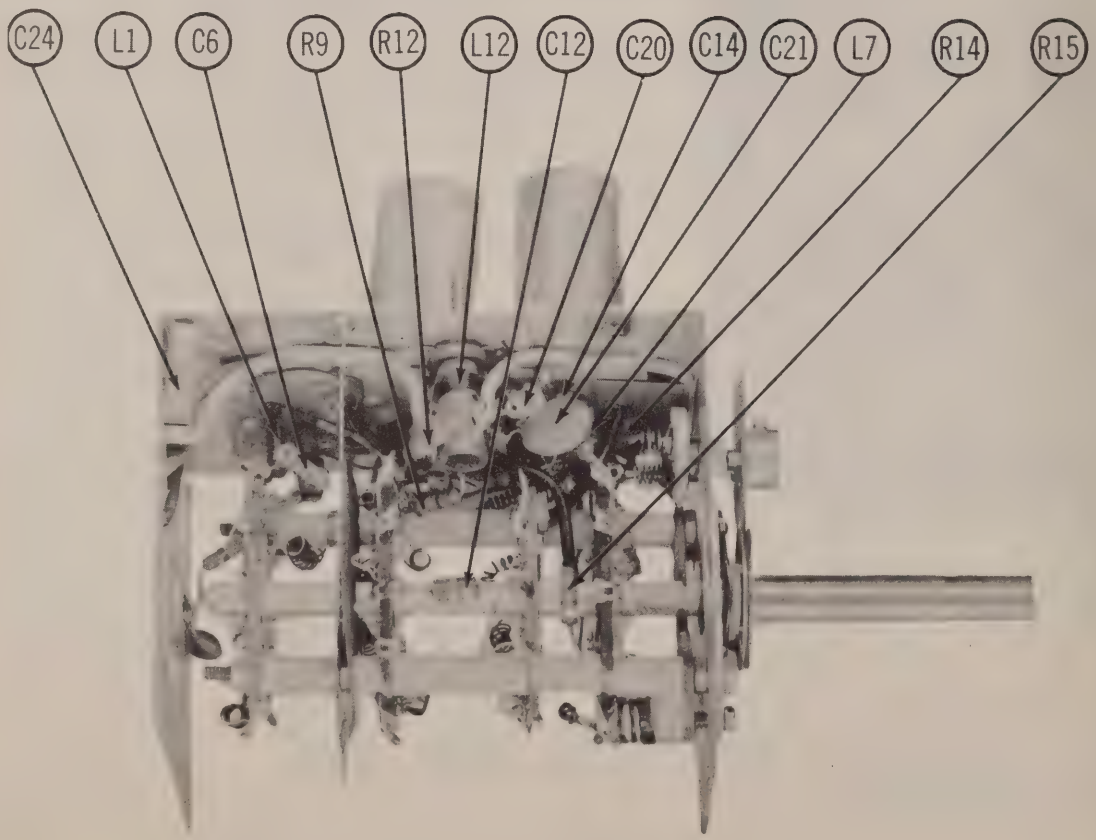
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
LOCAL-DISTANCE SWITCH IN "LOCAL" POSITION
† MEASURED FROM PIN 8 OF V25
# MEASURED FROM PIN 3 OF V23
■ MEASURED FROM PIN 8 OF V16.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6AK5	6AK5	7BD	
V2	Converter	6J6	6J6	7BK	
V3	1st. Video IF Amp	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp	6CB6	6CB6	7CM	
V6	4th. Video IF Amp	6BA6	6BA6	7BK	
V7	Video Detector – Sync. Limiter	6AL5	6AL5	6BT	
V8	Video Output	6AC7	6AC7	8N	
V9	AGC Amplifier	6AV6	6AV6	7BT	
V10	AGC Keying	6AU6	6AU6	7BK	
V11	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V12	2nd. Sound IF Amp	6AU6	6AU6	7BK	
V13	Limiter	6AU6	6AU6	7BK	
V14	Discriminator	6AL5	6AL5	6BT	
V15	AF Amplifier	6AV6	6AV6	7BT	
V16	Audio Output	6Y6G	6Y6G	7AC	
V17	Sync Seperator – Sync. Clipper	12AU7	12AU7	9A	
V18	Sync. Phase Inv- Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V19	Vert Output	6S4	6S4	9AC	
V20	Horiz. AFC	6AL5	6AL5	6BT	
V21	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V22	Horiz. Output	6CD6G	6CD6G	5BT	
V23	Damper	6W4GT	6W4GT	4CG	
V24	HV Rectifier	1B3GT	1B3GT	3C	
V25	LV Recifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V26	17BP4A	17BP4A		12D	① Circuit changes necessary.
		17BP4 ①		12D	
		17HP4 ①		12C	
		17RP4 ①		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	E22422-7	AFH3-43		UPT44145		FP376.8	TVL-3785	
B	■40	450		PRS350/12		BR1235A		TC62	TVA-1604	
C	▲10	450								
D	10	350								
C2	3000	15	E22422-12	AFH1-04		UP3M-15		WP042	R1115	
C3A	▲60	450	E22422-9	AFH4-87		BR6045		FP368	TVL-3790	
B	■40	250		PRS250/40		UPT4145-820		TC42	TVA-1310	
C	▲10	150								
D	80	50								
C4A	▲10	450	E22422-8	AFH3-53		UPT41145		FP376.8	TVL-3785	
B	■10	450		PRS250/40		BR4025A		TC72	TVA-1705	
C	▲40	450								
D	40	250								
C5	4	300		PRS350/4		BR435		TC60	TVA-1601	Note 1
C6	22				TCZ-22		NPOK-220	ZT-5422	5TCC-Q22	
C7	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	Note 2
C8	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C9	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	Note 2
C10	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	Note 2
C11	.3									
C12	.68				TCZ-.68		NPOK-R68			
C13	.75						NPOK-R75			
C14	25			SI25	D6-250		GP1K-250	UC-5425	5GA-Q25	
C15	.68				TCZ-.68		NPOK-R68			
C16	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C17	.6						NPOK-R60			Note 3
C18	1.5						N330K-1R5			
C19	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	Note 2
C20	15			SI15	D6-150		GP1K-150	UC-5415	5GA-Q15	
C21	5000		A21674	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C22	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	5000		A21674	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C24	240	500		1469-00025		5R5T25		MCB240	MS-325	
C25	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C26	5000		A21674	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C27	36						N330K-360			
C28	8.2						NPOK-8R2			
C29	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C30	610		C20351-1							
C31	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C32	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C33	47						N330L-470			
C34	47		C20205-19				N220L-470			
C35	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C36	610		C20351-1							
C37	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C38	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C39	39						N330K-390			
C40	47		C20205				N220L-470			
C41	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C42	610		C20351-1							
C43	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C44	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C45	47		C20205-19				N220L-470			

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C46	2.2		C20205-7				N220K-2R2			
C47	39						N330K-360			
C48	680		C20351-1							
C48	1000		A23078	BPD-001	DD-102	TMSD1	801-001	DC-531	5HK-D1	
C50	1000		A23078	BPD-001	DD-102	TMSD1	801-001	DC-531	5HK-D1	
C51	1000		A23078	BPD-001	DD-102	TMSD1	801-001	DC-531	5HK-D1	
C52	68		C20205-11				N220L 680			
C53	1000		A23078	BPD-001	DD-102	TMSD1	801-001	DC-531	5HK-D1	
C54	5		C2020579		TCN-5		N750K-050	NT-555		
C55	220						N330-333-131			
C56	1000		A23078	BPD-001	DD-102	TMSD1	801-001	DC-531	5HK-D1	
C57	.022	200	C20291-223	P488-022		PTE4822		PT4122	4TM-S22	
C58	.22	400	C20292-224	P488-22		PTE4P22		PT4022	4TM-P22	
C59	.047	400	C20292-473	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C60	.001	600	C20295-102	P688-001	D6-102	PTE6D1	GP2L-102	PT622	6TM-D1	
C61	.0047	600	C20295-472	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C62	.47	200	C20291-474	P488-47		P2I2P5		PT405	2TM-P47	
C63	.47	200	C20291-474	P488-47		P2I2P5		PT405	2TM-P47	
C64	.1	200	C20291-104	P288-1	DF-104	P2I2P1		PT401	2TM-P1	
C65	47		C20205-19				N220L-470			
C66	5000		A21674	BPD-005	DD-502	TMSD5	811-005	DC525	5HK-D5	
C67	5000		A21674	BPD-005	DD-502	TMSD5	811-005	DC525	5HK-D5	
C68	47		C20205-19				N220L-470			
C69	5000		A21674	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C70	5000		A21674	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C71	47		C20205-19				N220L-470			
C72	5000		A21674	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C73	47		C20205-19				N220L-470			
C74	.001	600	C20295-102	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C75	.01	600	C20295-103	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C76	.0022	600	C20295-223	P688-0022	D6-223	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C77	.0033	600	C20295-332	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D3	
C78	.0033	600	C20295-332	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D3	
C79	270	500	C20290-271	S1270	D6-271	5R5T3	GP2K-271	UC-5327	5GA-T27	
C80	.01	1000	C20296-103	P1088-01		PTE10S1		PT611	MB-S1	
C81	.1	400	C20294-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C82	.01	1000	C20296-103	P1088-01		PTE16S1		PT611	MB-S1	
C83	.47	200	C20291-474	P288-47		P2J2P5		PT405	2TM-P47	
C84	.047	600	C20295-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C85	120	500	C20056-121	1469-00015	D6-121	5R5T15	GP3K-121	MCB315		
C86A	.0022			P688-0022		PTE6D22	GP2-333-222	PT6222		
B	.0047		•C24166	P688-0047	• PC-100	PTE6D47	GP2-333-472	PT6247	•101C1	
C	.0047			P688-0047		PTE6D47	GP2-333-472	PT6247		
C87	.0047	600	C20324-472	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C88	.0015	600	C20295-452						6TM-D15	
C89	.047	600	C20295-473	P688-047		PTE6S47		PT6147	6TM-S47	
C90	.1	600	C20295-104	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C91	.022	200	D20414-223	P488-022		PTE4S22		PT4122	4TM-S22	
C92	.1	1000	C20296-104	P1088-1		PTE16P1		PT1601	MB-P1	
C93	1.1	400	C20294-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C94	1000	500	C24612-102	1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C96	1000	500	C24612-102	1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C97	.01	600	C20295-103	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C97	.01	600	C20295-103	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C98	.047	200	C20291-473	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C99	300	500	C20290-101	1469-0001		5R5T1		MCB235	MS-31	
C100	3900	500	C20374-392	1464-004		LDR5D4		MCB463		
C101	330	500	C20290-331	1469-00035						
C102	47	500	C20290-470	1469-00005		5R5Q5		MCB225	MS-45	
C103	330	500	C20290-331	1469-00035						
C104	270	500	C20290-271	1469-0003		5R5T3		MCB241	MS-33	
C105	.047	600	C20295-473	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C106	.22	400	C20292-224	P288-22		PTE4P22		PT4022	4TM-P22	
C107	.047	200	C20291-473	P488-047		PTE4S47		PT4147	4TM-S47	
C108	.022	200	C20291-223	P488-022		PTE4S22		PT4122	4TM-S22	
C109	.22	600	C20295-224	684-25		PTE6P25		PT6025	6TM-P25	
C110	500	20000		HV20A		MM-A20T5	413-501	HV20035	20DK-T5	
C111	.1	200	C20291-104	P288-1	DF-104	P2J2P1		PT401	2TM-P1	
C112	.01	600	C20358-103	689ZGXY-01		PJ6S1		PT611	6TM-S1	
C113	.01	600	C20358-103	689ZGXY-01		PJ6S1		PT611	6TM-S1	

Note 1. Some models use 5MFD in this application (Part No! A23052-2)
Note 2. Some models use 1000MMF ain this application (Part No. A 23078)
Note 3. Some models use .51MMF in this application
• Items C86A, C86B, C86C, R91A, R91B, R91C are combined in one unit

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3000Ω	2	E22464-20	QJ-71 *	RTV-259			Vert Linearity-Wire Wound-Panel Height-Rear
B	2.5Meg							Contrast-Panel
R2A	25KΩ		E22464-17	QJ-52 **	RTV-258	SBBT-688-S		Volume & SW-Tapped ② 1Meg-Rear
B	3 Meg							Tone & Phono SW-Note 1
R3	2Meg		E22464-35					Brightness-Note 2
R4A	100KΩ		E22464-34	QH-128	AG-49-S	AB-40	U-41	Attach to R4A
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Horiz. Hold-Note 3
R5A	50KΩ		E22464-37	QH-123	AG-44-S	AB-31	U-35	Attach to R5A
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Vert Hold-Note 4
R6A	1.5Meg		E22464-36	QH-138	AG-63-S	AB-75	U-155	Attach to R6A
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	

NOTE 1. - Some models use alternate control (Part No. E22464-19)
NOTE 2. - Some models use alternate control (Part No. E22464-18)
NOTE 3. - Some models use alternate control (Part No. E22464-23)
NOTE 4. - Some models use alternate control (Part No. E22464-22)

• CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS W11-112 & P3-114(Panel), B11-239 & R2-124(Rear)
•• CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS B11-120 & P2-200(Panel), B10-140X & R1-220 (Rear) & SWITCH 78-1.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	ARVIN PART No.	IRC PART No.	NOTES
R7	4700Ω	½		BTS-4700	Note 1
R8	1000Ω	½		BTS-1000	
R9	8200Ω	½			
R10	6800Ω	½			Note 2
R11	220KΩ	½		BTS-220K	
R12	12KΩ	½		BTS-12K	
R13	100Ω	½			
R14	15KΩ	½		BTS-15K	
R15	4700Ω	½		BTS-4700	
R16	560KΩ	½		BTS-560K	
R17	3300Ω	½		BTS-3300	
R18	1000Ω	½	C20061-102	BTS-1000	
R19	470Ω	½	C22381-471	BTS-470	
R20	15KΩ	½	C22381-153		
R21	47Ω	½	C2238-470		
R22	1000Ω	½	C20061-102	BTS-1000	
R23	3300Ω	½	C20061-332	BTS-3300	
R24	150Ω	½	C20061-151	BTS-150	
R25	18KΩ-5%	½	C22382-183		
R26	47Ω	½	C2238-470		
R27	1000Ω	½	C20061-102	BTS-1000	
R28	3300Ω	½	C20061-332	BTS-3300	
R29	150Ω	½	C20061-151	BTS-150	
R30	47Ω	½	C2238-470		
R31	1000Ω	½	C20061-102	BTS-1000	
R32	150Ω	½	C20061-151	BTS-150	
R33	22KΩ	½	C22381-223	BTS-22K	
R34	120Ω	½	C22381-121	BTS-120	
R35	1000Ω	½	C20061-102	BTS-1000	
R36	150Ω	½	C20061-151	BTS-150	
R37	4700Ω	½	C22381-472	BTS-4700	
R38	1500Ω	½	C20061-152	BTS-1500	
R39	27Ω	½	C22381-270		
R40	4300Ω-5%	½	C22383-432	BTA-4300-5%	
R41	10KΩ	½	C22381-103	BTS-10K	
R42	15KΩ	½	C22381-153	BTS-15K	
R43	10KΩ	½	C20061-103	BTS-10K	
R44	220KΩ	½	C22381-224	BTS-220K	
R45	220KΩ	½	C22381-224	BTS-220K	
R46	100KΩ	½	C20061-104	BTS-100K	
R47	68Ω	½	C22381-680		
R48	5600Ω-5%	½	C22381-562	BTS-6500-5%	
R49	1000Ω	½	C22381-102	BTS-1000	
R50	470KΩ	½	C20061-474		
R51	150Ω	½	C20061-151	BTS-150	
R52	1000Ω	½	C20061-102	BTS-1000	
R53	22K	½	C22381-223	BTS-22K	
R54	47KΩ	½	C22381-473	BTS-47K	
R55	10KΩ	½	C22381-103	BTS-10K	
R56	100KΩ	½	C22381-104	BTS-100K	
R57	100KΩ	½	C22381-104	BTS-100K	Note 3
R58	4.7Ω	½			
R59	27K	½	C22381-273	BTS-27K	
R60	100K	½	C22381-104	BTS-100K	
R61	220KΩ	½	C22381-224	BTS-223K	
R62	10Meg	½	C20061-106	BTS-10Meg	
R63	220KΩ	½	C20061-224	BTS-220K	
R64	100KΩ	½	C22381-104	BTS-100K	
R65	180KΩ-5%	½	C22382-184	BTS-180K-5%	
R66	470Ω	1	C20103-471	BTA-470	Note 4
R67	470Ω	1	C20103-471	BTA-470	Note 5
R68	240KΩ-5%	½	C22382-244	BTS-240K-5%	
R69	2700Ω	2	C20302-272	BTB-2700	
R70	680Ω	½	C22381-681	BTS-680	
R71	470Ω	1	C20103-471	BTA-470	Note 4
R72	470Ω	1	C20103-471	BTA-470	Note 5
R73	22KΩ	½	C22381-223	BTS-22K	
R74	6800Ω	½	C22381-682	BTS-6800	
R75	120KΩ	½	C22381-124	BTS-120K	
R76	12KΩ-5%	½	C22382-123	BTS-12K-5%	
R77	47KΩ	½	C22381-473	BTS-47K	
R78	100KΩ	½	C22381-104	BTS-100K	Note 6
R79	100KΩ	½	C22381-104	BTS-100K	Note 5
R80	10KΩ	½	C20061-103	BTS-10K	
R81	47KΩ	½	C22381-473	BTS-47K	
R82	2.2Meg	½	C22381-225	BTS-2.2Meg	
R83	270KΩ	½	C22381-274	BTS-270K	
R84	18KΩ	½	C22381-183	BTS-18K	
R85	22KΩ	½	C22381-223	BTS-22K	
R86	22KΩ	½	C22381-223	BTS-22K	
R87	2.2Meg	½	C22381-225	BTS-2.2Meg	
R88	4.7Meg	½	C22381-475	BTS-4.7Meg	
R89	3300Ω	½	C22381-332	BTS-3300	
R90	3300Ω	½	C22381-332	BTS-3300	
R91A	22KΩ		•C24166		
B				BTS-8200	
C	8200Ω	½		BTS-8200	
R92	22KΩ	½	C22381-223	BTS-22K	
R93	470KΩ	½	C22381-474	BTS-470K	
R94	1.5Meg-5%	½	C22382-155	BTS-1.5Meg-5%	
R95	1.5Meg-5%	½	C22382-155	BTS-1.5Meg-5%	
R96	100KΩ	½	C22381-104	BTS-100K	
R97	10Meg	½	C22381-106	BTS-10Meg	
R98	6800Ω	½	C22381-682	BTS-6800	
R99	18000	½	C20302-182	BTB-1800	
R100	2.2Meg	½	C22381-225	BTS-2.2Meg	
R101	470Ω	1	C20103-471	BTA-470	
R102	8200Ω	½	C22381-822	BTS-8200	
R103	100KΩ-5%	½	C22382-104	BTS-100K 5%	
R104	100KΩ-5%	½	C22382-104	BTS-100K 5%	
R105	4.7Meg	½	C22381-475	BTS-4.7Meg	
R106	470KΩ	½	C22381-474	BTS-470K	
R107	12KΩ	2	C20302-153	BTB-12K	Note 7
R108	2700Ω	½	C22381-272	BTS-2700	Note 5
R109	8200Ω	½	C22381-822	BTS-8200	
R110	1200Ω	½	C22381-122	BTS-1200	
R111	91KΩ-5%	½	C22382-913	BTA-91K-5%	
R112	120KΩ	½	C22381-124	BTS-120K	
R113	47KΩ	½	C22381-473	BTS-47K	
R114	8200Ω	½	C22381-822	BTS-8200	
R115	47Ω	½	C20061-470		
R116	470KΩ	½	C22381-474	BTS-470K	
R117	150Ω	10	C-23970-12	1 3/4A-150	
R118	27KΩ	2		BTB-27K	Note 8
R119	27KΩ	2		BTB-27K	Note 5
R120	27KΩ	2		BTB-27K	Note 5
R121	500Ω	10	C23970-13	1 3/4 A-500	
R122	3.3Ω	½	C20308-33		
R123	470KΩ	1	C20103-474		
R124	50Ω	5	C23970-6	1 3/4 A-50	
R125	220KΩ	½	C22381-224	B TS-220K	

Note 1. Some models use a 15KΩ resistor in this application.
Note 2. Some models use a 4700Ω resistor in this application.
Note 3. Some models use a 5.1Ω resistor in this application.
Note 4. Some models use a 220Ω resistor in this application.
Note 5. Not used in all models.
Note 6. Some models use a 47KΩ resistor in this application.
Note 7. Some models use a 15KΩ resistor in this application.
Note 8. Some models use a 8000Ω resistor in this application.
• Items R91A, R91B, R91C, C86A, C86B, C86C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117 VAC	680VCT	5VAC	6.3VAC	E24654		P-3078		R-38BC
	② 2A	250A DC	② 3A	② 9.5A					
			SEC 4	SEC 5					
			6.3VAC	6.3VAC					
			② 1.55A	② 1.2A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	190Ω	1050Ω	C22446-1	A-8122	A-4003	TB0-3 ①	A-97Y	Vert Osc. Trans.
T3	403Ω Tap ② 33Ω	18.50Ω Tap ② 14Ω	E24681	A-8120	HVO-7	TBF-5	D-14 ②	Horiz. Output Trans.
		SEC #2						
		0Ω						
T4	1200Ω Tap ② 11Ω		C23657	A-8123	A-3037	TB0-11 ③	A-102X	Vert Output Trans
T5A	22Ω		D24807	DY-9	MFD-70 ④	TY-3	Y-17 ④	Horiz Deflection Coils
B	50Ω							Vert Deflection Coils

① Drill one new mtg. hole.
② Use with WC-11
③ Mount on top of chassis.
④ Alter yoke network

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	2.3KΩ	3.5Ω	198Ω	.7Ω	C-23490-1	A-3825	A-3905 ①	TP-356	S-4X	① Drill one mtg. hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	ARVIN PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	10"	75Ω	3.5Ω	E23638	ST-745 Mod. F10-S	10E75S	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	ARVIN PART No.	MERIT PART No.	IRC PART No.	NOTES
L1	Ant. Trans.	0Ω	0Ω				
L2	Ant. Coils	0Ω					
L3	Ant. Coils	0Ω					Channel 13
L4	Fil. Choke	0Ω					
L5	RF Coil	0Ω					Channel 13
L6	RF Coils	0Ω					
L7	Mixer Grid Coil	0Ω					
L8	Mixer Grid Coils	0Ω					
L9	Osc. Coil	0Ω					Channel 13
L10	Osc. Coils	0Ω					
L11	Fil. Choke	.2 Ω				CL-1	.56 Microhenries
L12	Conv. Plate	0Ω	0Ω				
L13	1st. Video IF	.1Ω	0Ω	C23546			Includes Trap
L14	Fil. Choke	0Ω		A23095			
L15	2nd. Video IF	0Ω	0Ω	C23443			Includes Trap
L16	3rd. Video IF	0Ω	0Ω	C23444			Includes Trap
L17	RF Choke	1.6Ω		C22500-19			20 Microhenries Wound on 18K Resistor
L18	Fil. Choke	0Ω		A23095			
L19	4th. Video IF	0Ω	0Ω	C23445			Includes Trap
L20	RF Choke	1.6Ω		C22500-19			Wound on 18K resistor
L21	Cathode Trap	0Ω	0Ω	C23821			
L22	5th. Video IF	0Ω	0Ω	C23446			Includes Trap
L23	Cath. Choke	1.6Ω		C22500-19			20 Microhenries Wound on 12K Resistor
L24	Peak. Coil	8Ω		C22500-4	TV-181†		90 Microhenries Wound on 33K Resistor
L25	4.5 mc Trap	.5Ω		C25416	TV-151		
L26	Peak Coil	6Ω		D22500-17	TV-184 •		180 Microhenries Wound on 47K Resistor
L27	Peak Coil	8.5Ω		C22500-18			300 Microhenries
L28	1st Sound IF	1.5Ω		C23448			
L29	2nd Sound IF	2Ω	2Ω	C23447	TV-113		
L30	Discriminator	1.6Ω	1.6Ω CT.	C23893	TV-114		
L31	Hor. Osc.	50Ω		C23449	TV-163		
L32	Hor. Lin	11Ω		C24754			Tap ② 4Ω
L33	Width	38Ω	42Ω	C24655	MWC-1		

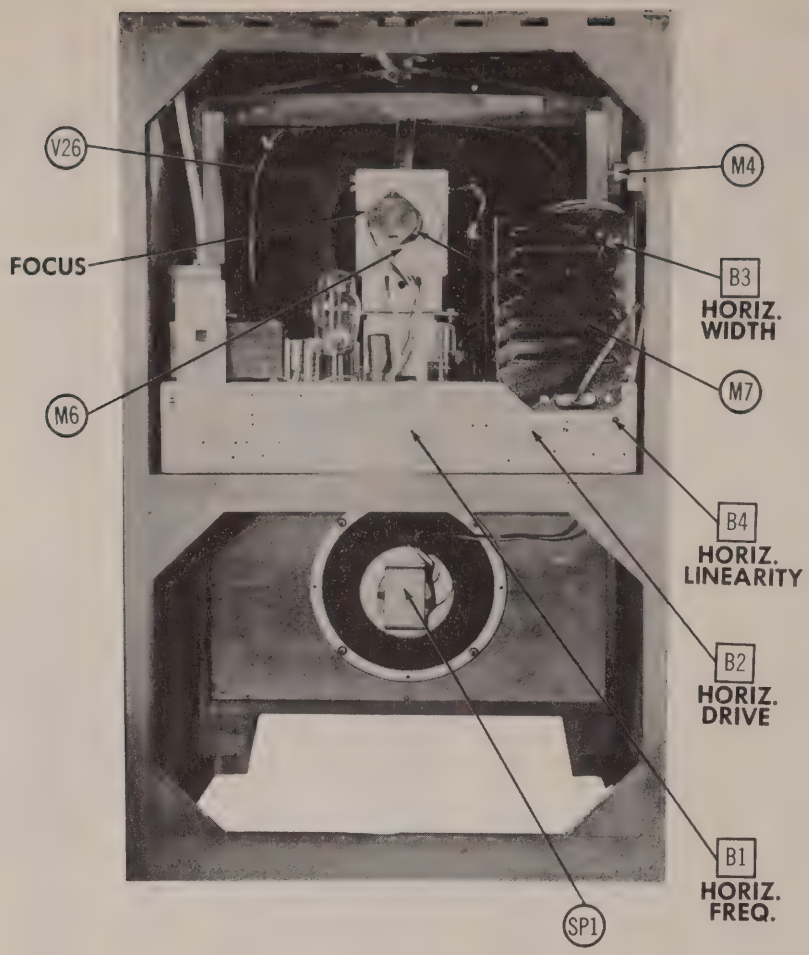
† Parallel with 33K Resistor
• Parallel with 47K Resistor

FUSES

ITEM No.	TYPE	RATING	ARVIN PART No. FUSE	ARVIN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	1/4 A 250V	A22493		318.250		GJV 1/4A	

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M2	High Pass Filter	C25255	Assembly
M3	RF Tuner	E25138-1	
M4	Switch	A22868	Interlock
M5	Switch	C23685-1	Local-Distance
M6	Focus Magnet	C23910-1	
M7	Ion Trap	C24119-1	
B2	Trimmer	A24528	Horiz. Drive (40-370MMF)
	Knob	D25108-1	Channel Selector
	Knob	D23604	Contrast
	Knob	D23605	Fine Tuning
	Knob	D25109-1	Off/On Volume
	Knob	C22686-4	Vert. & Horiz. Hold, Brightness, Tone & Phono (4 Required)
	Mask	25536	
	Dust Seal	C23121-1	Rubber, For Mask
	Safety Glass	E25537	



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the mid-position of its range.

Adjust the horizontal lock slug (B1) until the picture synchronizes horizontally.

The horizontal drive trimmer (B2) should be set at the point of best compromise between brightness and horizontal linearity.

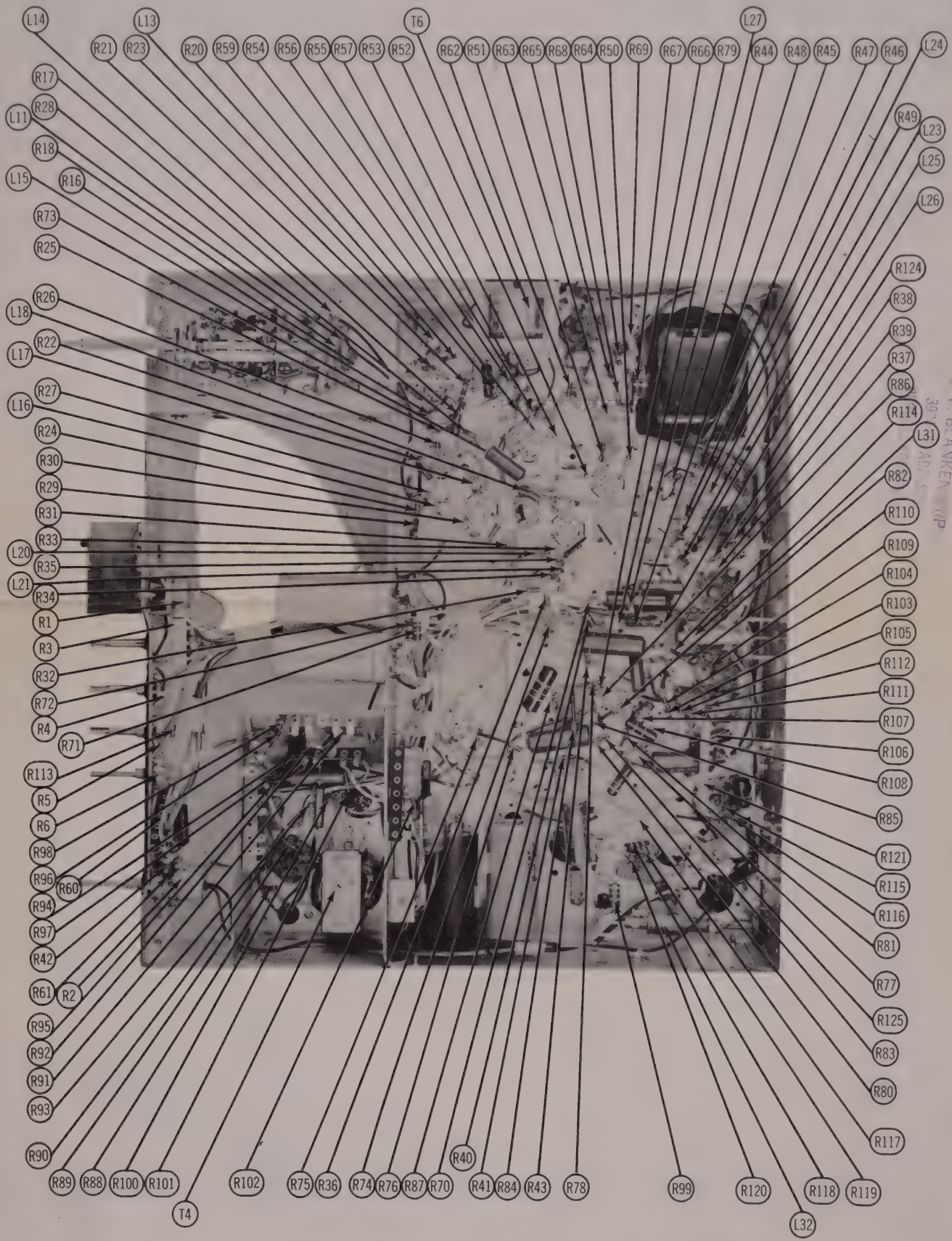
Adjust the width slug (B3) for a picture slightly wider than enough to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 6 wood screws. Remove rear cover.
3. Disconnect built-in antenna and speaker.
4. Remove 4 speaker nuts. Remove speaker.
5. Remove 2 metal screws. Remove safety lock.
6. Remove 6 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

*TRADE MARK

DUMONT
MODELS RA-160, RA-162

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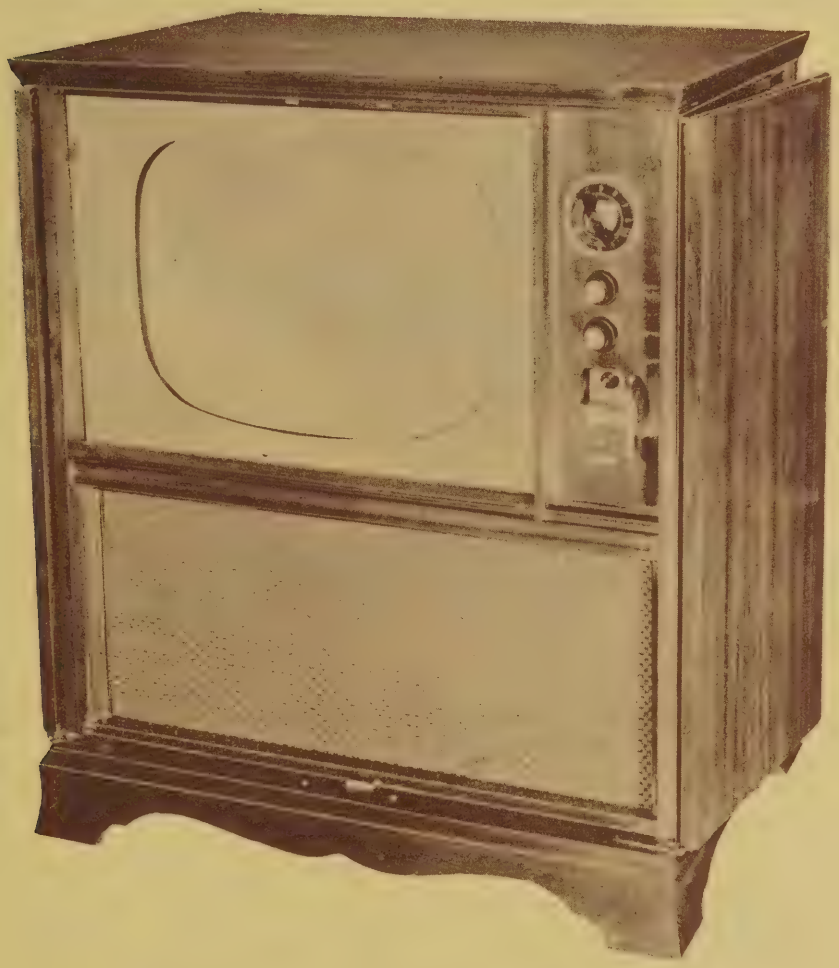

MODEL RA-162

DUMONT
MODELS RA-160, RA-162

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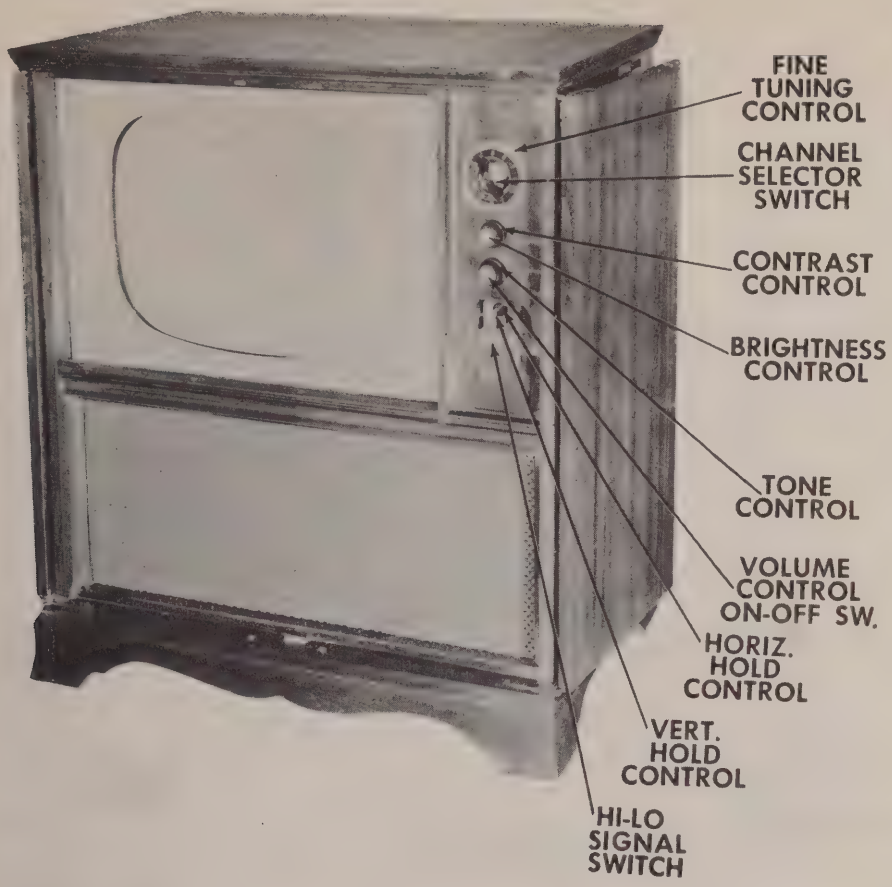
DUMONT
MODELS RA-160, RA-162



PROPERTY OF
C. F. BLANKENSHIP
3224 MEADE ST.
DENVER, COLORADO

DUMONT RA-162 (WHITEHALL II)

TRADE NAME	Dumont Models RA-160-A1 (Devon), RA-162-B1 (Wickford), RA-162-B4 (Banbury), RA-162-B5 (Flanders) RA-162-B6 (Wimbledon), RA-162-B7 (Whitehall II), RA-162-B21 Thru B26 (Banbury) *
MANUFACTURER	Allen B Dumont Laboratories Inc., 2 Main St., Passaic, N.J.
TYPE SET	Television Receiver
TUBES	Twenty-six
POWER SUPPLY	110-120 Volts AC-60Cycle RATING 2.6 Amp @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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* Model number designated by color of door panels.

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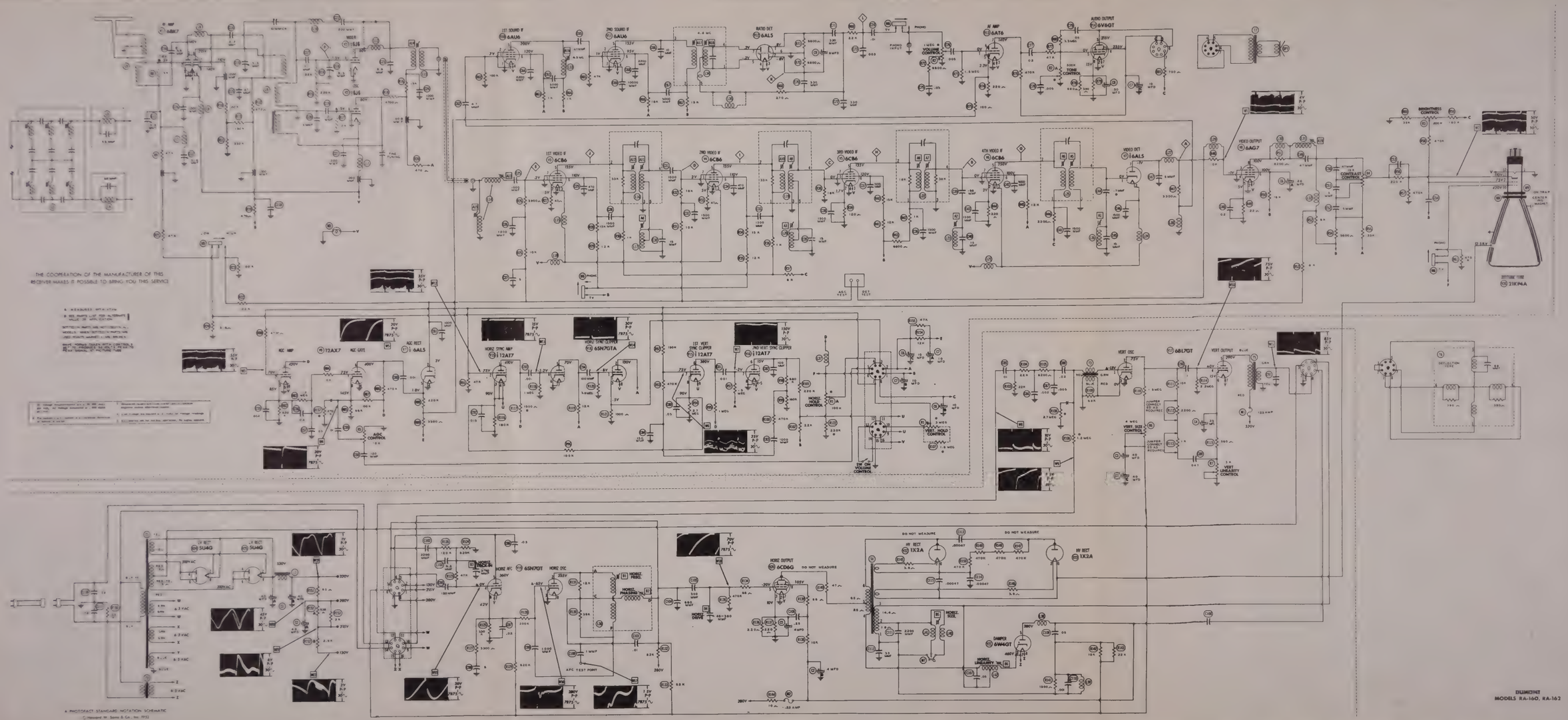
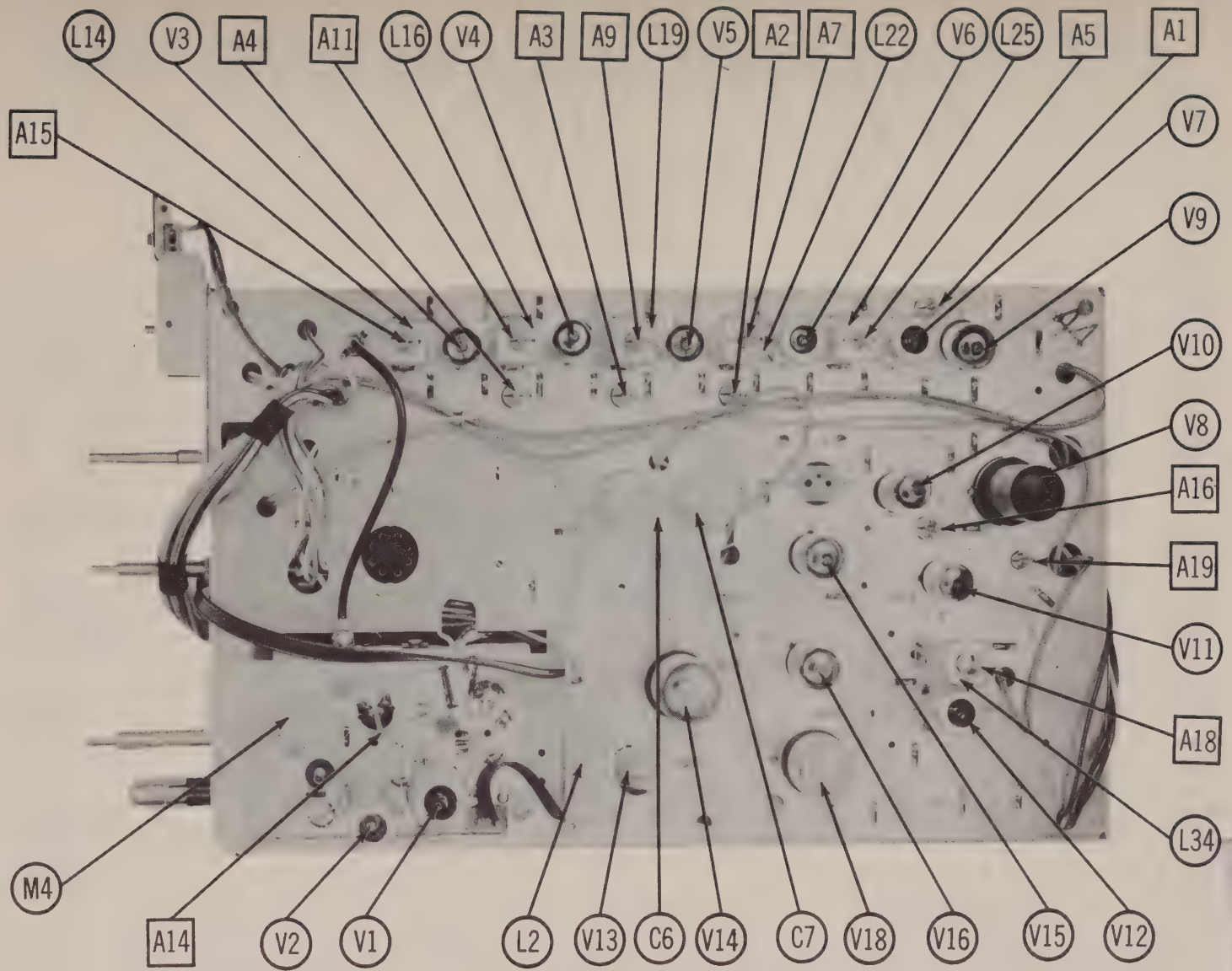
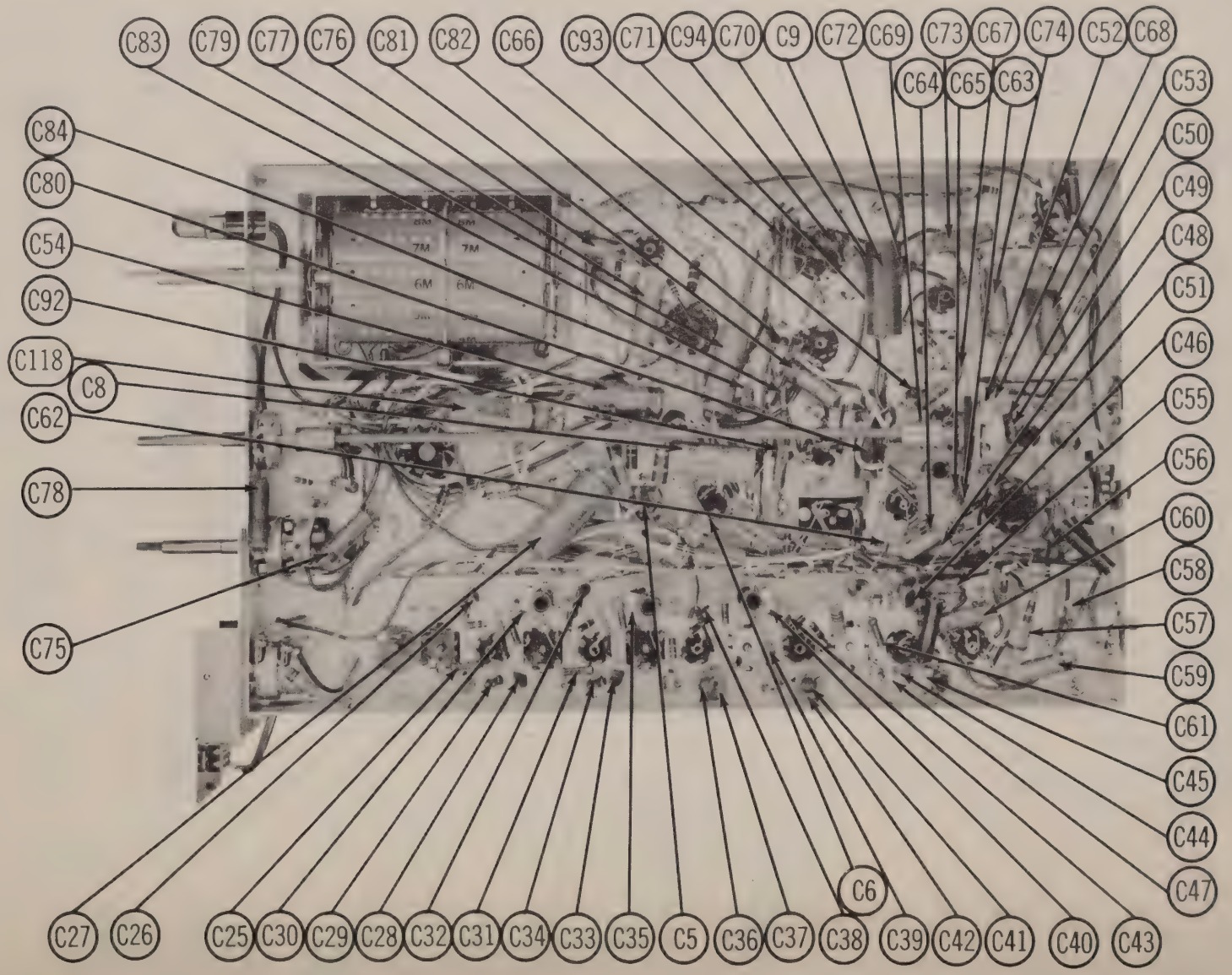
DUMONT
MODELS RA-160, RA-162


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
DUMONT
MODELS RA-160, RA-162

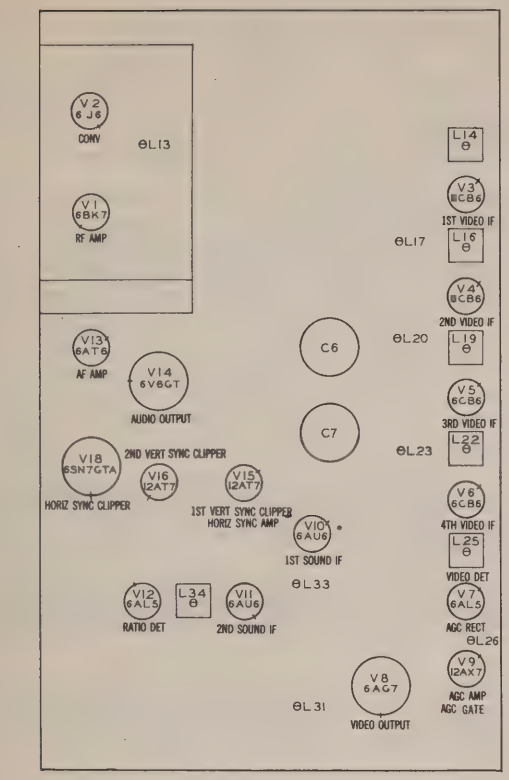


RF-IF CHASSIS-TOP VIEW

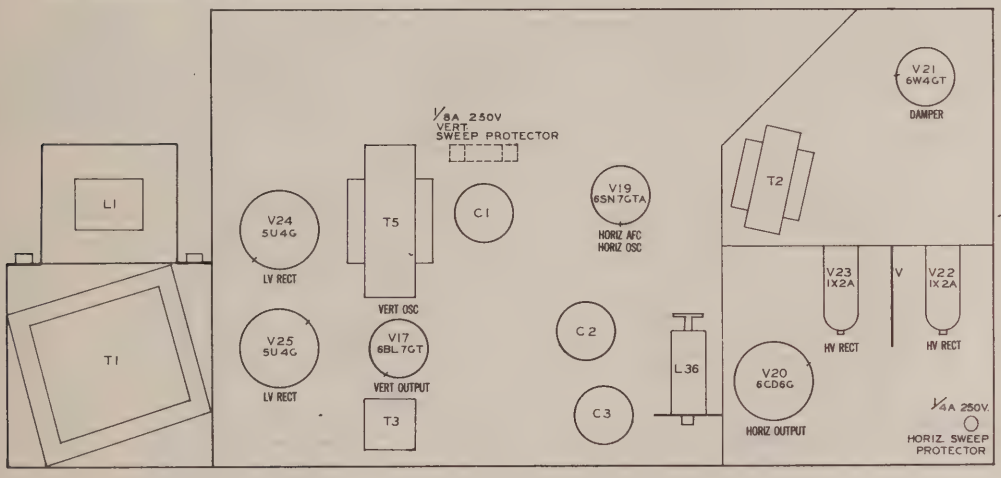


RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEWS



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, No sound-V24, V25

LOSS OF PICTURE OR SOUND
No pic, No sound, Has raster-V2, V3, V4, V5, V6, V7
No pic, No sound, Has snow-V1, V2, V3
No pic, Has sound, Has raster-V8, V26
Has pic, No sound-V10, V11, V12, V13, V14
Overloaded picture-V7, V9

SYNC FAILURE
No vert. sync. -V15, V16, V17
No hor. sync. -V15, V18, V19
No vert. or hor. sync. -V15

SWEEP FAILURE
No raster, Has sound-V19, V20, V21, V22, V23, V26, Fuse (M2)
No vertical deflection-V17, Fuse (M1)
Poor vert. linearity or foldover-V17
Poor horiz. linearity or foldover-V19, V20, V21
Narrow picture-V19, V20, V21, V22, V23, V24, V25
Vert. off freq. -V16, V17
Horiz. off freq. -V18, V19

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Removal of damper tube V21 will eliminate the high voltage shock hazard and disable the AGC.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.

Provision is made whereby the band pass of each Video IF Transformer may be varied. This is accomplished by adjusting the position of the wire which enters the bottom of the can. Sliding the wire in or out varies the bandpass of the transformer. This adjustment should not be made until the transformer slugs have been set to bring the curve to approximately the correct frequency. After the bandpass adjustment a recheck of the slug setting should be made.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to point (C). Low side to chassis.	Not Used	41.25MC (400∿ AM Mod.)	Any	Vert. amp. to point (A). Low side to chassis.	A1, A2	Adjust for MINIMUM 400∿ response.
2.	"	High side to point (E). Low side to chassis.	"	47.25MC (400∿ AM Mod.)	"	"	A3, A4	"
3.	"	High side to point (B). Low side to chassis.	43.5MC (10MC Swp)	39.75MC 41.25MC 42.25MC 45.75MC 47.25MC	"	"	A5, A6	Adjust for response curve as per fig. 1. Make bandpass adjustment if necessary.
4.	"	High side to point (C). Low side to chassis.	"	39.75MC 41.25MC 42.5MC 45.75MC 47.25MC	"	Vert. amp. thru detector probe (fig. 6) to point (G). Low side to chassis.	A7, A8	Adjust for response curve as per fig. 2. Make bandpass adjustment if necessary.
5.	"	High side to point (D). Low side to chassis.	"	39.75MC 41.25MC 42.5MC 43.5MC 45.75MC 47.25MC	"	Vert. amp. thru detector probe to point (H). Low side to chassis.	A9, A10	Adjust for response curve as per fig. 3. Make bandpass adjustment if necessary.
6.	"	High side to point (E). Low side to chassis.	"	39.75MC 41.25MC 42.5MC 44.5MC 45.75MC 47.25MC	"	Vert. amp. thru detector probe to point (I). Low side to chassis.	A11, A12	Adjust for response curve as per fig.4. Make band pass adjustment if necessary.
7.	"	High side to point (F). Low side to chassis.	"	39.25MC 41.25MC 45.75MC 47.25MC	"	Vert. amp. thru detector probe to point (J). Low side to chassis.	A13, A14 A15	Remove dummy converter tube, V2, wrap fine wire around pin 5, replace tube in socket and connect signal generator to wire. Adjust A13 and A14 for response as per fig. 5. Adjust A15 for bandpass if necessary.

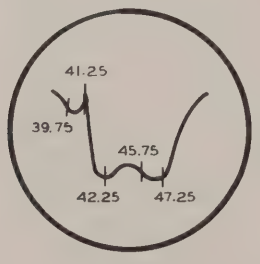


FIG.1

FIG.2

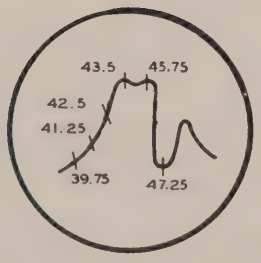


FIG.3

FIG.4

ALIGNMENT INSTRUCTIONS (CONT.)

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point A . Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point K.. Common to chassis.	A16, A17	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to point L . Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450 KC Sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001MFD	High side to point A . Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point K . Low side to chassis.	A16, A17	Disconnect stabilizer capacitor C9. Adjust for curve of maximum amplitude and symmetry as per fig. 7. Keep generator output low.
9.	"	"	"	"	"	Vert. amp. to point L . Low side to chassis.	A18	Reconnect capacitor C9. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 8. SLIGHTLY retouch A17 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to point A . Low side to chassis.	Not used	4.5MC (400% Mod.)	Any	Vert. amp. thru detector probe to pin 11 of picture tube	A19	Adjust for MINIMUM 400% indication.

THE TUNER PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

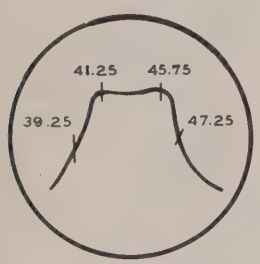


FIG.5

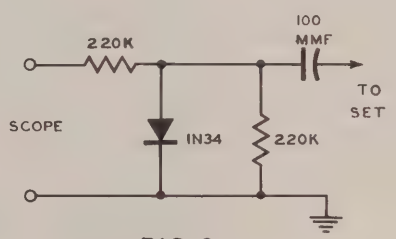


FIG.6

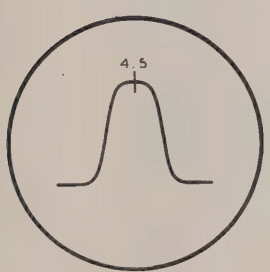


FIG.7

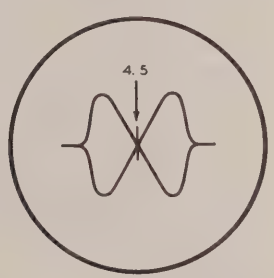
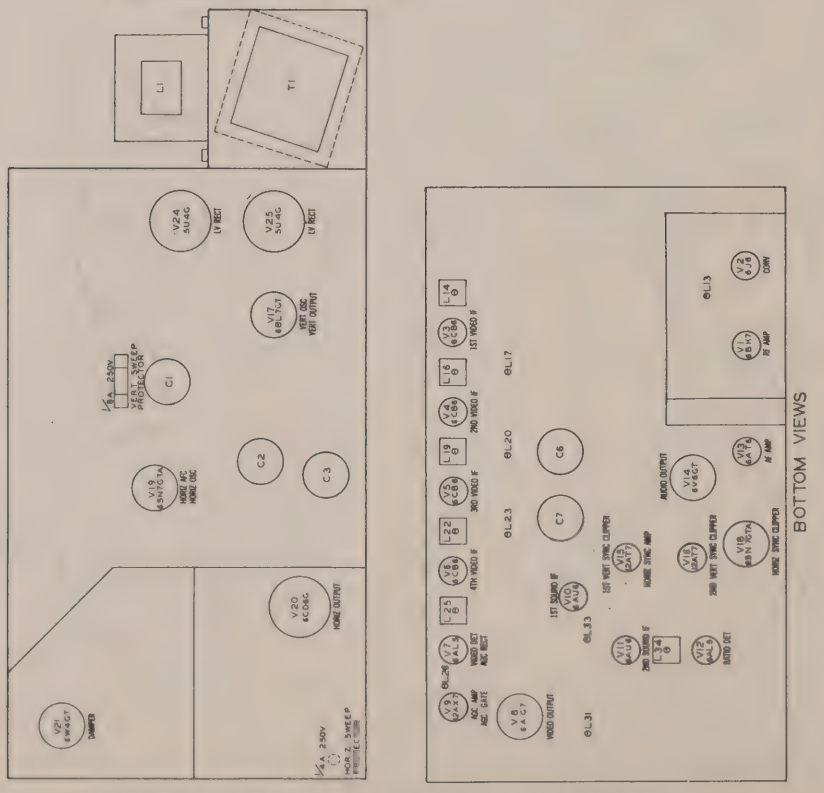


FIG. 8

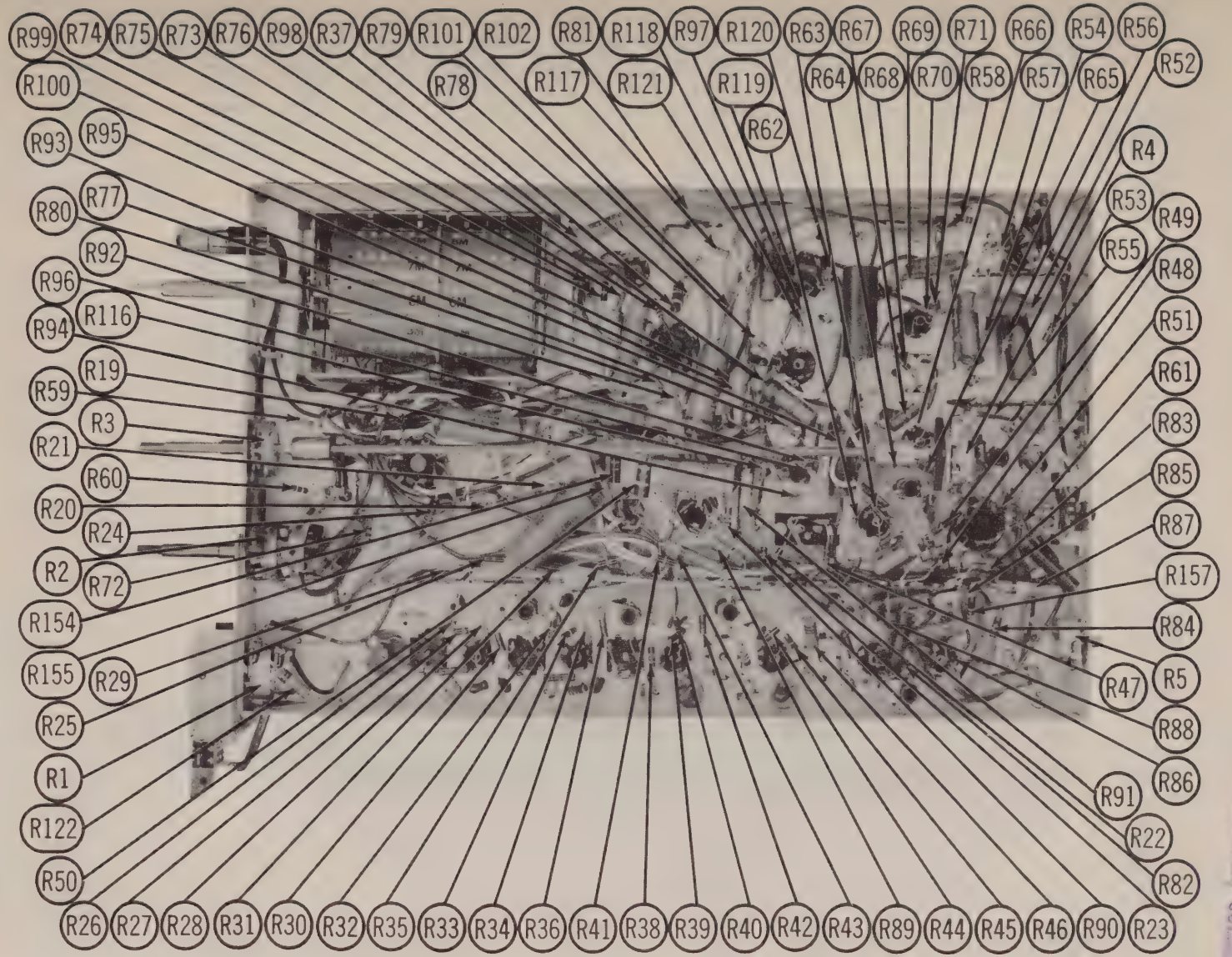
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	200KΩ	0Ω	.1Ω	0Ω	†1.6KΩ	†200KΩ	INF	0Ω
V 2	6J6	†8.2KΩ	†19KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	214KΩ	47Ω	.3Ω	0Ω	†7.1KΩ	†27KΩ	0Ω		
V 4	6CB6	228KΩ	47Ω	.2Ω	0Ω	†7.1KΩ	†27KΩ	0Ω		
V 5	6CB6	.1Ω	120Ω	.1Ω	0Ω	†8.4KΩ	†27KΩ	0Ω		
V 6	6CB6	.2Ω	220Ω	.2Ω	0Ω	†2.3KΩ	†15KΩ	0Ω		
V 7	6AL5	.2Ω	200KΩ	.3Ω	0Ω	220KΩ	0Ω	3.3KΩ		
V 8	6AG7	0Ω	0Ω	0Ω	3.3KΩ	22Ω	†18KΩ	.1Ω	†5KΩ	
V 9	12AX7	#6.9KΩ	†20KΩ	820KΩ	0Ω	0Ω	#470KΩ	2Meg	50KΩ	.1Ω
V 10	6AU6	100KΩ	0Ω	0Ω	.1Ω	†1.6KΩ	†4.5KΩ	0Ω		
V 11	6AU6	47KΩ	0Ω	0Ω	.1Ω	†16KΩ	†21KΩ	0Ω		
V 12	6AL5	6.8KΩ	6.8KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 13	6AT6	1.5Meg	220Ω	.1Ω	0Ω	INF	INF	†470KΩ		
V 14	6V6GT	0Ω	0Ω	†1.3KΩ	†890Ω	500KΩ	547KΩ	.1Ω	250Ω	
V 15	12AT7	#8.4KΩ	†15KΩ	180KΩ	¶0Ω	¶0Ω	#1Meg	150KΩ	270KΩ	¶.2Ω
V 16	12AT7	INF	INF	INF	.1Ω	.1Ω	†190KΩ	†1.5Meg	0Ω	0Ω
V 17	6BL7GT	1.2Meg	#3.8Meg	164Ω	2.2Meg	†651Ω	1KΩ	.1Ω	0Ω	
V 18	6SN7GTA	3.9Meg	†3.5KΩ	1.5KΩ	1Meg	†15KΩ	0Ω	0Ω	.1Ω	
V 19	6SN7GTA	430KΩ	†60KΩ	0Ω	860KΩ	#50KΩ	220KΩ	.1Ω	0Ω	
V 20	6CD6G	INF	0Ω	110Ω	INF	470KΩ	†10KΩ	.1Ω	†10KΩ	TOP CAP #80Ω
V 21	6W4GT	INF	INF	70KΩ	INF	†150Ω	INF	#0Ω	#.3Ω	
V 22	1X2A PINS 1 - 9 HAVE INF RESISTANCE									TOP CAP #98Ω
V 23	1 X 2A PINS 1-9 HAVE INF RESISTANCE									TOP CAP #INF
V 24	5U4G	INF	10KΩ	INF	14Ω	INF	14Ω	INF	10KΩ	
V 25	5U4G	INF	10KΩ	INF	14Ω	INF	14Ω	INF	10KΩ	
V 26	21KP4A	0Ω	550KΩ	Pin 10 #6.9KΩ	Pin 11 160KΩ	Pin 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION. NO SIGNAL APPLIED
HI-LO SIGNAL SWITCH IN "HI" POSITION
SIZE SWITCH IN "CENTER" POSITION
† MEASURED FROM PIN 2 OF V24 & PIN 8 OF V25
# MEASURED FROM PIN 3 OF V 21
¶ MEASURED FROM PINS 4 & 5 OF V 15

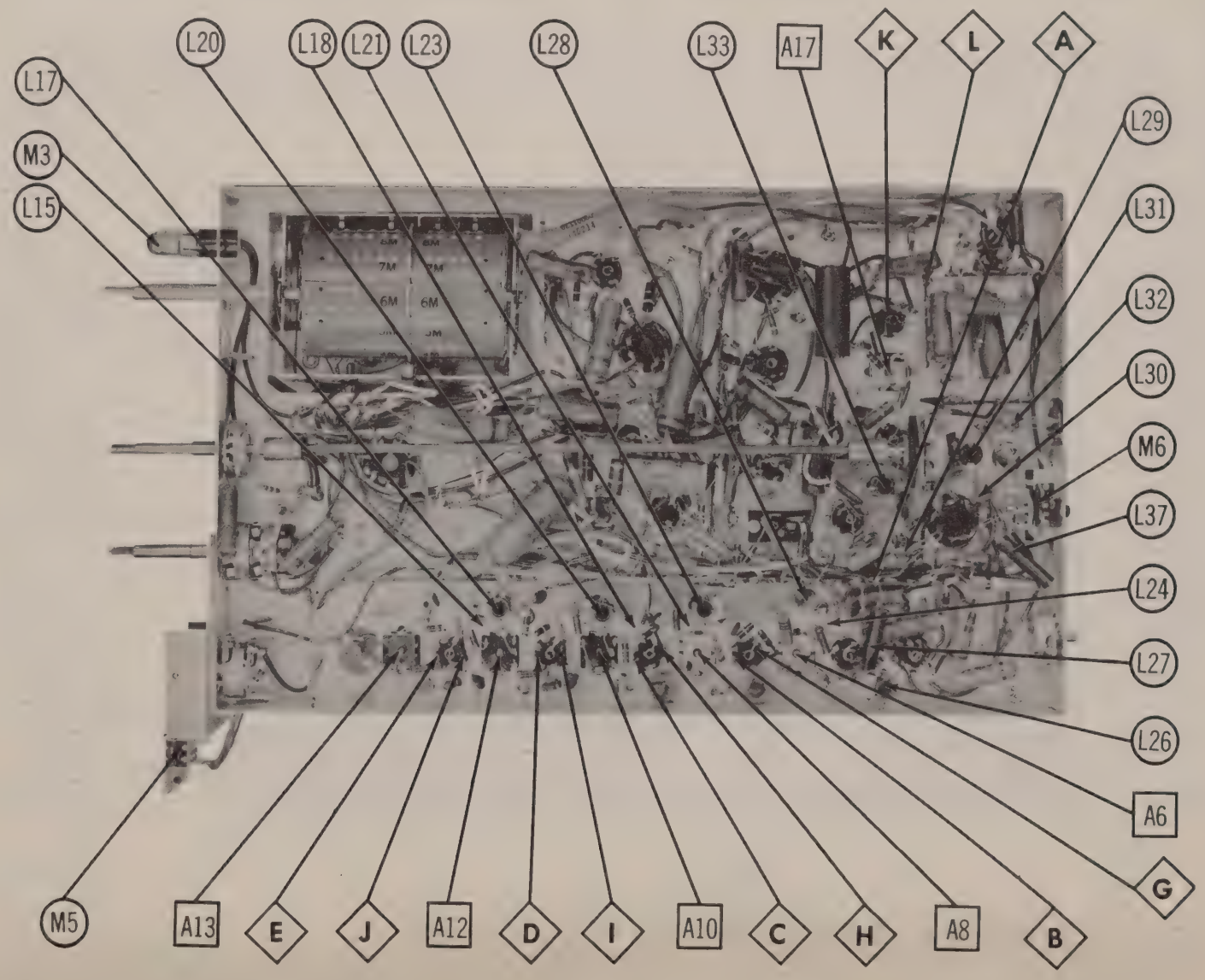


TUBE PLACEMENT CHART



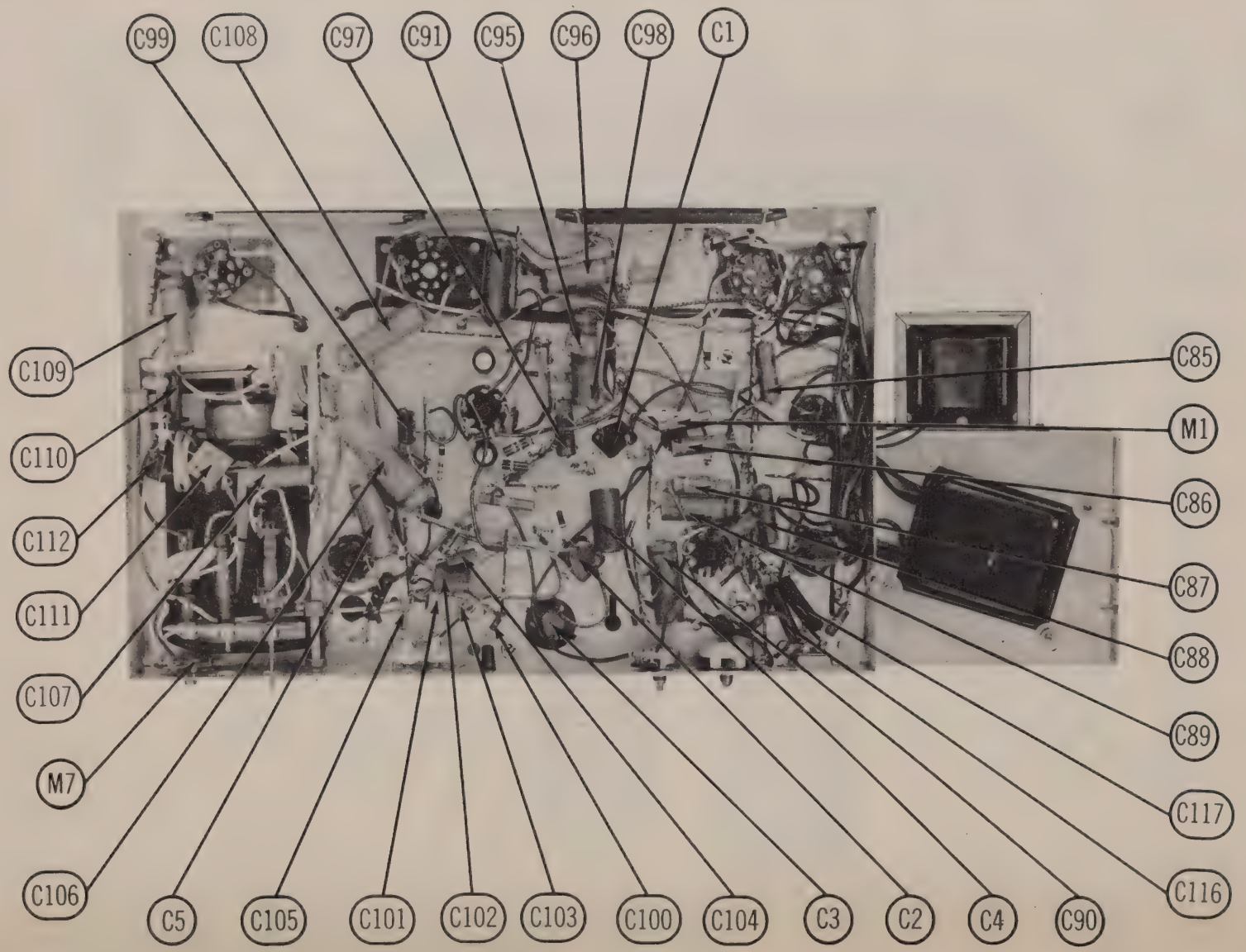
RF-IF CHASSIS-BOTTOM VIEW- RESISTOR IDENTIFICATON

FROM
E. F. D.
3824
DENVER, COLORADO

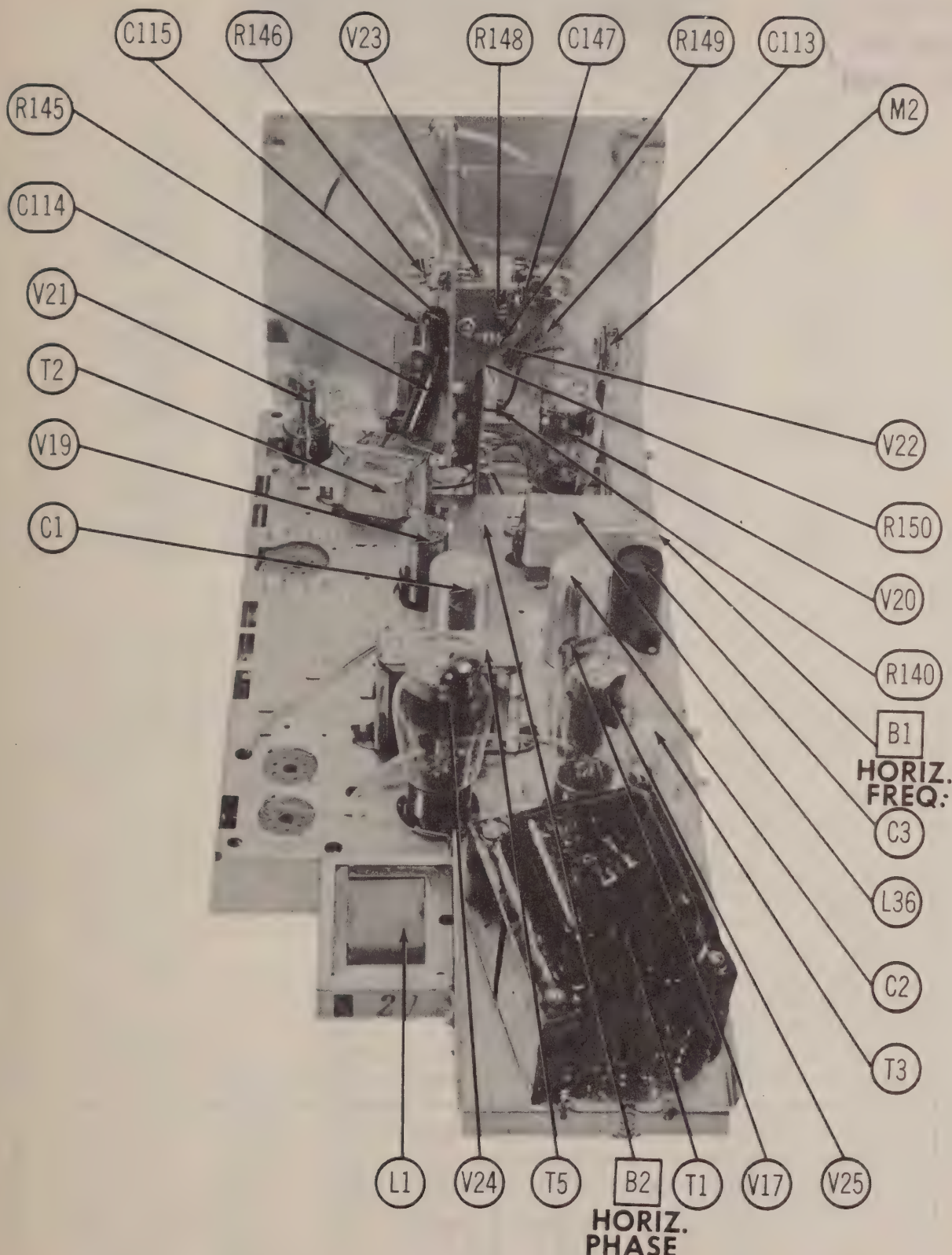


RF-IF CHASSIS - BOTTOM VIEW INDUCTOR AND ALIGNMENT IDENTIFICATION

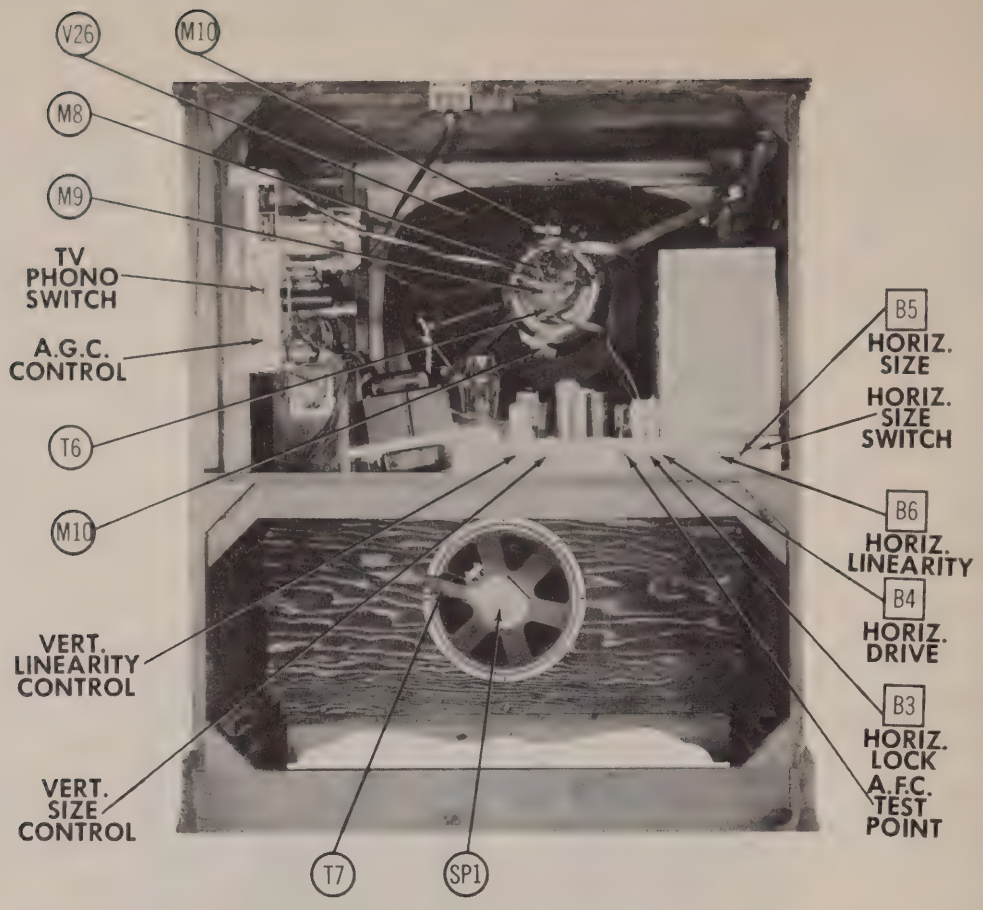
RF TUNER–RIGHT SIDE



SWEEP CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



SWEEP CHASSIS-TOP VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control fully clockwise.

Turn the horizontal lock-in trimmer (B3) fully clockwise, then counter clockwise approximately $2\frac{1}{2}$ turns.

Turn the horizontal-phasing adjustment (B2) fully counter clockwise.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Connect the vertical input of an oscilloscope between the AFC test jack and chassis.

Adjust B2 for a waveform as shown in fig. 9.

If necessary, keep the picture in sync by adjusting B1.

Adjust B1 so that the picture moves to the right of the raster, just to the point of losing sync.

Turn the horizontal hold control to the mid-position of its range.

Set the horizontal size switch to the position which gives the most nearly correct horizontal size.

Adjust the horizontal size slug (B5) for a picture slightly larger than enough to fill the picture mask horizontally.

If the picture is too wide and cannot be reduced enough by means of B5 and the horizontal size switch, adjust the horizontal drive trimmer (B4) slowly clockwise from the fully counter clockwise position until desired size is obtained.

Do not adjust to the point where marked vertical size increase occurs.

Adjust the horizontal linearity slug (B6) for a picture that is symmetrical from left to right.

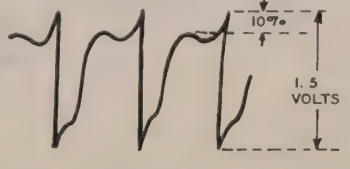


FIG. 9

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DUMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BK7	6BK7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Ampl	6CB6	6CB6	7CM	
V4	2nd Video IF Amp	6CB6	6CB6	7CM	
V5	3rd Video IF Amp	6CB6	6CB6	7CM	
V6	4th Video IF Amp	6CB6	6CB6	7CM	
V7	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Output	6AG7	6AG7	8Y	
V9	AGC Amplifier-AGC Gate	12AX7	12AX7	9A	
V10	1st Sound IF Amp	6AU6	6AU6	7BK	
V11	2nd Sound IF Amp	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier	6AT6	6AT6	7BT	
V14	Audio Output	6V6GT	6V6GT	7AC	
V15	1st Vert. Sync. Clipper-Horiz. Sync. Amp.	12AT7	12AT7	9A	
V16	2nd Vert. Sync. Clipper	12AT7	12AT7	9A	
V17	Vert Oscillator	6BL7GT	6BL7GT	8BD	
V18	Horiz. Sync. Clipper	6SN7GTA	6SN7GTA	8BD	
V19	Horiz. AFC-Horiz. Oscillator	6SN7GTA	6SN7GTA	8BD	
V20	Horiz. Output	6CD6G	6CD6GT	5BT	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1X2A	1X2A	9Y	
V23	HV Reiciter	1X2A	1X2A	9Y	
V24	LV Recifier	5U4G	5U4G	5T	
V25	LV Recifier	5U4G	5U4G	5T	

PRO... L. F. ELECTRONICSHIP 3924 MEADE ST. DENVER, COLORADO

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: DUMONT PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA:	RTMA BASE TYPE	NOTES
V26A	21KP4A			12C	
B	17KP4A			12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	03115010	AFH2-72		UPT4445		FP238	TVL-2764	
B	▲40	400								
C2A	■40	400	03116470	AFH3-43		UPT44145		FP376.8	TVL-3785	
B	▲4	450								
C	▲40	300								
C3	40	300	03116470	AFH3-35		UP4035		FP146	TVL-1621	
C4	25	50	03116750	PRS50/25		BR255A		TC36	TVA-1306	
C5	4	150	03013670	PRS150/4		BR415		TC40	TVA-1402	
C6A	■20	400	03115030	AFH3-35		UP21145		FP376.3	TVL-2750	
B	▲10	400							TVA-1709	
C	10	350								
C7A	10	150	03115020	AFH3-30		UP11145		FP375.8	TVL-3690	
B	▲10	400								
C	■10	400								
C8	50	25	03000020	PRS25/50		BR502A		TC29	TVA-1206	
C9	8	100	03016750	PRS150/8		BR815		TC41	TVA-1405	
C10	3.6						NP0K-3R6			Note 1
C11	3-8				829-10					
C12	3-8				829-10					
C13	.5-3				829-3			CT565A		
C14	2.2				TCZ-2.2		NP0K-2R2		5TCCB-V22	
C15	47			SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C16	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C17	47			SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C18	.5-3				829-3			CT565A		
C19	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C20	5			SI5NP0	TCZ-4.7		NP0K-4R7	ZT-555	5TCCB-V47	
C21	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C24	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	1000		03015810	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C26	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C27	.5	200	03002190	P288-5		PJ2P5		PT405	2TM-P5	
C28	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C29	470		03115040	SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C30	15		03014580		TCZ-15		NP0K-150		5TCC-Q15	
C31	1000		03015810	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C32	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-525	5HK-D15	
C33	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-525	5HK-D15	
C34	470		03115040	SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C35	15		03014580		TCZ-15		NP0K-150		5TCC-Q15	
C36	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C37	5000		03015610	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C38	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C39	.68		03014520		TCZ-.68		NP0K-R68			
C40	15		03014580		TCZ-15		NP0K-150		5TCC-Q15	
C41	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C42	5000		03015610	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C43	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C44	.7									Note 2
C45	15		03014580		TCZ-15		NP0K-150		5TCC-Q15	
C46	1500		03017850	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C47	5		03014730	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C48	.02	200	03018470	P288-02	DF-203	PJS2		PT412	2TM-S2	
C49	47		03015760		TCZ-47		NP0L-470	ZT-5447	5TCC-Q47	
C50	47		03015760		TCZ-47		NP0L-470	ZT-5447	5TCC-Q47	
C51	15		03017310	SI15	D6-150		GP1K-150	UC-5415	5CA-Q15	
C52	5		03017330	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C53	1	400	03019260	P488-1	DF-104	PTE4P1		PT401	1TM-P1	
C54	1	400	03019260	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C55	.002	600	03014670	P488-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C56	.02	200	03018470	P288-02	DF-203	PJS2		PT412	2TM-S2	
C57	.03	200	03018230	P488-03		PTE6S3		PT413	6TM-S3	
C58	120		03015350	SI120	D6-121	TM5T12	GP2K-121	UC-5312	5CA-T12	
C59	.01	400	03001450	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C60	.001	600	03014720	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C61	1000		03015810	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C62	4.7		03014560	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C63	5000		03015610	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C64	2200	500	03029480	1464-0025	D6-222	1R5D25	GP2-333-222	MCB460		
C65	47		03015330	SI47	D6-470	TM5Q6	GP1K-470	UC-5447	5CA-Q47	
C66	10		03013080	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C67	5000		03015610	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C68	2200	500	03029480	1464-0025	D6-222	1R5D25	GP2-333-222	MCB460		
C69	10000		03019650	BPD-01	DD-103	TM5E1	821-01	DC-511	5HK-E1	
C70	330	500	03020490	1469-00035						
C71	330	500	03020490	1469-00035						
C72	330		03014390	SI330	D6-331		GP2K-331	UC-5333	5CA-T33	
C73	.003	600	03015870	P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C74	.01	400	03014900	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C75	.03	200	03001230	P488-03		PTE6S3		PT413	6TM-S3	
C76	.005	600	03018620	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C77	.02	600	03018550	P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C78	.005	600	03018620	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C79	.05	600	03015370	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C80	.05	300	03000950	P388-05	DF-503	PJS5		PT415	2TM-S5	
C81	.001	600	03104720	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C82	100		03016700	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C83	1000		03015810	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C84	150	500	03014980	1469-00015	D6-180	5R5T15	GP2K-151	MCB236	5CA-T15	
C85	.01	600	03012560	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C86	.002	600	03014430	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C87	.005	600	03018640	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C88	.02	400	03100450	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C89	.047	600	03105100	P688-047		PTE6S47		PT6147	6TM-S47	
C90	1	600	03014920	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C91	1	400	03019260	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C92	.015	200	03017340	P288-015		PTE6S15			6TM-S15	
C93	.001	600	03104720	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C94	100		03016700	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C95	120	500	03020440	1469-00015		5R5T15		MCB236		
C96	.05	600	03015370	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C97	.02	400	03001460	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C98	.5	200	03002190	P288-5		PJ2P5		PT405	2TM-P5	
C99	1000	500	03030680	1464-001		1R5D1		MCB255	MS-21	
C100	1		03013150	1468-0000001	TCZ-1		NP0K-010			
C101	.01	600	03101540	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C102	2200	500	03029640	1464-0025		1R5D25		MCB460		
C103	8.2		03117280							
C104	680	500	03025370	1479-0007		2R5T7			MS-37	
C105	390	500	03020500	1469-0004		5R5T4		MCB243	MS-34	
C106	25	600	03019190	684-25		PTE6P25		PT6025	6TM-P25	
C107	.05	200	03100350	P288-05		PJ2S5		PT415	2TM-S5	
C108	1	600	03019250	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C109	.05	600	03015370	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C110	.001	600	03115380	P688-001	D6-102	PTE6D1	GP2L-105	PT621	6TM-D1	
C111	2200	500	03029480							
C112	33	500	03020640	SI33	D6-330		GP1K-330	UC-5433	5GA-Q33	
C113	.00047	10000	03017450	10084-0005		PTE10OTS			TVM-351	
C114	.00047	10000	03017450	10084-0005		PTE10OTS			TVM-351	
C115	.00047	10000	03017450	10084-0005		PTE10OTS			TVM-351	
C116	.02	600	03018570	689ZGXY-02		PJ6S2		PT612	6TM-S2	
C117	.02	600	03018570	689ZGXY-02		PJ6S2		PT612	6TM-S2	
C118	.1	600	03019250	P688-1	DF-104	PTE6P1		PT601	6TM-P1	

Note 1. Some models use 5MMF in this application.
Note 2. Some models use 1MMF in this application (Part #03012150).

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100KΩ	½	01038343	Q2-334**				Horiz. Hold-Panel-Note 1
B	3Meg	½						Vert Hold-Rear
R2A	500KΩ	½	01044600	*	RTV-346		UF55A	Tone-Panel -Note 3
B	1Meg	½					UR16-T1253	Volume-Tapped ② 100KΩ-Rear
C	Switch		Not Req.				US-26	Attach to R2B
R3	200KΩ	½	01044411	Q2-339†				Brightness
R4	15KΩ	½	01044700					Contrast-Tapped ② 5KΩ & 9KΩ
R5A	10KΩ	½	01029710	Q11-116	AG-27-S	AB-14	SU-20	AGC
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	4Meg	½	01029800	Q11-140	AG-85-S	AB-84	SU-59	Vert Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	3000Ω	2	01024780	W-3000	A43-3000	VK-133	R3000L	Vert. Linearity-Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R7A

** Concentrikit Equivalent-Kit K-2, Base Elements & Shafts B11-128 &P1-028 (Panel), B11-140 & R2-110 (Rear)
* Concentrikit Equivalent-Kit K-2, Base Elements & Shafts B13-133 & P1-126 (Panel), B18-137X & R2-212 (Rear) &Switch 76-1.
† Concentrikit Equivalent-Kit K-2, Base Elements-Q11-129(Panel), Rear-None, Shafts-P1-126 & R6-208
NOTE 1. Some models use alternate control(Part No. 01038342)
NOTE 2. Some models use alternate control(Part No. 01038860)

RESISTORS

ITEM No.	RATING OHMS	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	NOTES
R8	15KΩ	½	02031910		
R9	47KΩ	½	02032520		
R10	100KΩ	½	02032010		
R11	330KΩ	½	02032070	BTS-330K	
R12	470Ω	½	02032400	BTS-470	
R13	180KΩ	½	02032040		
R14	22KΩ	½	02032500	BTS-22K	
R15	220KΩ	½	02032560	BTS-220K	
R16	15KΩ	½	02031910		
R17	10KΩ	½	02032480		
R18	4700Ω	½	02032460	BTS-4700	
R19	470Ω	½	02032400	BTS-470	
R20	470Ω	½	02032400	BTS-470	
R21	47KΩ	½	02032520	BTS-47K	
R22	100KΩ	½	02032010	BTS-100K	
R23	100KΩ	½	02032010	BTS-100K	
R24	5.6Ω	½	02100930		
R25	10KΩ	½	02032480	BTS-10K	
R26	3900Ω	½	02031840	BTS-3900	
R27	47Ω	½	02031610		
R28	15KΩ	½	02031910	BTS-15K	
R29	12KΩ	½	02031900		
R30	1000Ω	½	02032420	BTS-1000	
R31	10KΩ	½	02032480	BTS-10K	
R32	18KΩ	½	02031920		
R33	47Ω	½	02031610		
R34	15KΩ	½	02031910	BTS-15K	
R35	12KΩ	½	02031900		
R36	1000Ω	½	02032420	BTS-1000	
R37	6000Ω	10	02113080	1 3/4A-6000	
R38	18KΩ	½	02031920		
R39	120Ω	½	02031680	BTS-120	
R40	15KΩ	½	02031910		
R41	12KΩ	½	02031900		
R42	1000Ω	½	02032420	BTS-1000	
R43	6800Ω	2	02038470	BTB-6800	
R44	220Ω	½	02031690	BTS-220	
R45	12KΩ	½	02031900		
R46	2200Ω	½	02035440	BTA-2200	
R47	3300Ω 5%	½	02030600	BTS-3300 5%	Note 4
R48	10KΩ	½	02031890	BTS-10K	
R49	22Ω	½	02031570		
R50	1*KΩ	2	02037920	BTB-1K	
R51	8200Ω	½	02031880	BTS-8200	
R52	6000Ω	10	02107970	1 3/4A-6000	
R53	18KΩ	½	02031920	BTS-18K	
R54	5600Ω	½	02031860	BTS-5600	
R55	33KΩ	½	02031950	BTS-33K	
R56	220KΩ	½	02032050	BTS-220K	
R57	470KΩ	½	02032090	BTS-470K	
R58	470KΩ	½	02032580	BTS-470K	
R59	1*0KΩ	½	02032040	BTS-180K	
R60	39KΩ	½	02031960	BTS-39K	
R61	470KΩ	½	02032580	BTS-470K	
R62	100KΩ	½	02032540	BTS-100K	
R63	1000Ω	½	02032420	BTS-1000	
R64	1000Ω	½	02032420	BTS-1000	
R65	47KΩ	½	02032520	BTS-47K	
R66	18KΩ	½	02031920	BTS-18K	
R67	15KΩ	1	02034910	BTA-15K	
R68	270Ω	½	02031700	BTS-270	
R69	22KΩ	½	02031930	BTS-22K	
R70	6800Ω	½	02031870	BTS-6800	
R71	6800Ω	½	02031870	BTS-6800	
R72	6800Ω	½	02031870	BTS-6800	
R73	1.5Meg	½	02032610	BTS-1.5Meg	
R74	220Ω	½	02031690	BTS-220	
R75	100Ω	½	02031650	BTS-100	
R76	470KΩ	½	02032580	BTS-470K	
R77	47KΩ	½	02032520	BTS-47K	
R78	680Ω	½	02031750	BTS-680	
R79	390Ω	1	02034720	BTA-390	
R80	3.3Meg	½	02032190	BTS-3.3Meg	
R81	750Ω	4	02121610	1 3/4A-750	
R82	820KΩ	½	02032120	BTS-820K	

ITEM No.	RATING OHMS	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	NOTES
R83	1.2Meg	½	02032140	BTS-1.2Meg	
R84	10KΩ	½	02031890	BTS-10K	
R85	68KΩ	1	02034990	BTA-68K	
R86	470KΩ	½	02032580	BTS-470K	
R87	100KΩ	2	02038010	BTB-100K	
R88	220KΩ	½	02032560	BTS-220K	
R89	3300Ω	1	02034830	BTA-3300	
R90	4700Ω	½	02031850	BTS-4700	
R91	47KΩ	½	02031970	BTS-47K	
R92	150KΩ 5%	½	02032060	BTS-150K 5%	
R93	470KΩ	½	02032090	BTS-470K	
R94	2.7Meg	½	02032180	BTS-2.7Meg	
R95	1Meg	½	02032130	BTS-1Meg	
R96	100KΩ	½	02032010	BTS-100K	
R97	1.5Meg	½	02032150	BTS-1.5Meg	
R98	680KΩ	½	02032110	BTS-680K	
R99	180KΩ	½	02032040	BTS-180K	
R100	470KΩ	½	02032090	BTS-470K	
R101	220KΩ	½	02032050	BTS-220K	
R102	22KΩ	½	02031930	BTS-22K	
R103	22KΩ	½	02031930	BTS-22K	
R104	22KΩ	½	02031930	BTS-22K	
R105	8200Ω	½	02031880	BTS-8200	
R106	1.2Meg	½	02032110	BTS-1.2Meg	Note 1
R107	1.8Meg	½	02032160	BTS-1.8Meg	Note 2
R108	2.7Meg	½		BTS-2.7Meg	Note 2
R109	68KΩ	½	02031990	BTS-68K	
R110	1.8Meg 5%	½	02034260	BTA-1.8Meg 5%	
R111	10KΩ	½	02030720	BTS-10K	
R112	2200Ω	½	02032440	BTS-2200	
R113	1000Ω	½	02032420	BTS-1000	
R114	2.2Meg	½	02032620	BTS-2.2Meg	
R115	560Ω	1	02034740	BTA-560	
R116	180KΩ	½	02032040	BTS-180K	
R117	1500Ω	½	02031790	BTS-1500	Note 3
R118	1Meg	½	02032600	BTS-1Meg	
R119	12KΩ	½	02031900	BTS-12K	
R120	3.9Meg	½	02032200	BTS-3.9Meg	
R121	1500Ω	½	0203179C	BTS-1500	
R122	220KΩ	1		BTA-220K	Note 4
R123	47KΩ	½	02031970	BTS-47K	
R124	820KΩ	½	02032120	BTS-820K	
R125	330KΩ	½	02032070	BTS-330K	
R126	120KΩ	½	02032020	BTS-120K	
R127	3300Ω	½	02031830	BTS-3300	
R128	200KΩ 5%	1	02034030	BTA-200K 5%	
R129	620KΩ 5%	1	02034150	BTA-620K 5%	
R130	39KΩ	½	02031960	BTS-39K	
R131	12KΩ	½	02031900	BTS-12K	
R132	82KΩ 5%	1	02034940	BTS-82K 5%	
R133	82KΩ 5%	1	02034940	BTA-82K 5%	
R134	68Ω	½	0..022350		
R135	470KΩ	½	02032580	BTS-470K	
R136	220Ω	2	02038380	BW-2-220	
R137	220Ω	2	02038380	BW-2-220	
R138	10KΩ	10	0213140	1 3/4A-10K	
R139	68Ω	½	02032350		
R140	47Ω	1		BW-1-47	
R141	1500Ω	2	02037790	BTB-1500	
R142	10KΩ	2	02037890	BTB-10K	
R143	22KΩ	1	02034930	BTA-22K	
R144	10Ω	½	02031530		
R145	3.6Ω	½	02100780		
R146	3.6Ω	½	02100780		
R147	470KΩ	2	02038580		
R148	470KΩ	2	02038580		
R149	470KΩ	2	02038580		
R150	470KΩ	2	02038580		
R151	85Ω	15.7	02150001		
R152A	835Ω	8.7	02216591		
B	2900Ω	5.8			
R153	2000Ω	5	02112260	1 3/4A-2000	
R154	12KΩ	2	02037900	BTB-12K	
R155	47KΩ	1	02035520	BTA-47K	
R156	100KΩ	1	02035610	BTA-100K	
R157	470KΩ	½	02032580	BTS-470K	

Note 1. Some models use a 680KΩ resistor in this application.
Note 2. Not used in all models.
Note 3. Some Models use a 1200Ω resistor in this application.
Note 4. Some models use a 120KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC ② 2.6A	620VCT .320ADC	5VAC ② 6A SEC 4 6.3VAC ② 4.7A	6.3VAC ② 6.4A SEC 5 6.3VAC ② .3A	20006884 20006883 ①		P-3066 ②③		R-50BC

① Used in Model RA-162
② Parallel both 5V windings
③ Use 12.6 V winding for Sec. 3 and 4.

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T2	117VAC ② .12A	6.3VAC ② 1.15A			20005014		P-3074		

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T3	164Ω	900Ω	20004728	A-8122	A-4003	TBO-2	A-97X	Vert. Osc. Trans.
T4	90Ω Tap ② 25Ω	16Ω Tap ② 1.6Ω SEC #2 0Ω SEC #3 0Ω	20006731					Horiz. Output Trans.
T5	800Ω	6.5Ω	20005037 20005497 ①	A-8115 ②	A-3036 ②	TSO-8 ②	A-107X ②	Vert Output Trans.
T6A	20Ω		21009961	DY-9	MDF-70 ③	TY-3	Y-17 ③	Horiz. Deflection Coils
B	50Ω							Vert Deflection Coils

① Alternate Vert. Output Trans.
② Drill one new mtg. hole.
③ Replace 560Ω resistors with 390Ω resistors and 56MMF capacitor with 68 MMF capacitor.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	4.7KΩ	3.5Ω	405Ω	.5Ω	Part of Spkr. 18003361	A-3849 ①	A-3019	RO-305	S-5X	① Drill one new mtg hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA DUMONT PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.5Ω	18003361	ST-119 Mod. P10-T	10A31	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ∿	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.320A	51Ω	2.4HY	21005218		C-2996		C-17X

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	IF Filter Unit			21009892			
L3	Trap	0Ω		21010410			Wound on 58MMF Capacitor
L4	Trap	0Ω		21010420			Wound on 58MMF Capacitor
L5	Ant. Coil	0Ω		40011181			Channel 2
L6	RF Choke	0Ω		21010400			
L7	RF Choke	1.4Ω					
L8	Fil. Choke	.1Ω		21010460			
L9	RF, Mixer Grid & Osc. Coils	0Ω		40011181			Channel 2
L10	RF Choke	.8Ω					
L11	Fil. Choke	.1Ω		21010470			
L12	Plate Choke	0Ω		21010450			
L13	Conv. Plate	0Ω	0Ω	20007770			
L14	1st. Video IF	0Ω	0Ω	20006901			Alternate Part #20006903
L15	Fil. Choke	.1Ω		21008972			
L16	2nd. Video IF	.2Ω	.2Ω	20006851			Alternate Part #20006853
L17	Adj. Channel Sound Trap	0Ω		21009101			Alternate Part #21009102
L18	Fil. Choke	.1Ω		21008972			Alternate Part #21009102
L19	3rd. Video IF	.2Ω	.2Ω	20006851			Alternate Part #20006853
L20	Adj. Channel Sound Trap	0Ω		21009101			Alternate Part #21009102
L21	Fil. Choke	.1Ω		21008972			
L22	4th. Video IF	.2Ω	.2Ω	20006861			Alternate Part #20006863
L23	Sound Trap	0Ω		21009091			Alternate Part #21009092
L24	Fil. Choke	.1Ω		21008972			
L25	5th. Video IF	.2Ω	.2Ω	20006871			Alternate Part No. -20006873
L26	Sound Trap	0Ω		21009091			Alternate Part No. -21009092
L27	RF Choke	2.9Ω		21007281			
L28	Peak Coil	7.3Ω		21006622			Alternate Part No. -21004654
L29	Peak Coil	9.3Ω		21006623			
L30	Peak Coil	7Ω		21006623			Alternate Part No. -21004653
L31	4.5MC Trap	2.8Ω		21010131	TV-151		Alternate Part No. -21010132
L32	Peak Coil	16Ω		21006627	TV-188		
L33	Sound IF	6.8Ω		21010121	TV-151		Alternate Part No. 21010122
L34	Ratio Det.	5.5Ω	.8Ω CT	20006141	TV-115		Tertiary Winding -.8Ω
L35	RF Choke			21007281			Not Used in All Models
L36	Horiz. Osc.	90Ω	35Ω	20007611			Phase Winding-33Ω
L37	RF Choke	4.5Ω		21007281			
L38	Plate Choke	.59Ω		12006230		CLA	
L39	Anti-Ringing Coil	5Ω		21007983			
L40	Horiz. Size	9Ω		21005821	MWC-1		
L41	Horiz. Size	1.1Ω		21005811			
L42	Horiz. Lin	8.5Ω		21007791			Tapped ② 2Ω

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA DUMONT PART No. FUSE	DUMONT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No FUSE	BUSS PART No HOLDER
M1	3AG	1/8A 250V			318.125		GJV1/8A	
M2	3AG	1/4A 250V	11000720	11000800	312.250	357001	AGC1/4A	4405

PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					DUMONT PART No.		
M3	Bayonet	7.5	.2	White	12001370		Type No. #51

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M4	RF Tuner	21009121	
M5	Switch	05004330	Hi-Lo Signal
M6	Switch	05005120	TV-Phono
M7	Switch	05003431	Horiz. Size
M8	Centering Magnet	29000651	
M9A	Ion. Trap	29000661	
B	Ion. Trap Shunt	28001381	"U" Shunt
C	Ion. Trap Shunt	28001391	"L" Shunt
M10	Magnets	35017217	Anti-Pin Cushion Correction (2) Required
B3, B4	Trimmer	03114440	Dual Horiz. Lock 5-10MMF, Horiz. Drive 45-380MMF
	Ant Coils	40011182	Channel #3
	Ant Coils	40011183	Channel #4
	Ant Coils	40011184	Channel #5
	Ant Coils	40011185	Channel #6
	Ant Coils	40011186	Channel #7
	Ant Coils	40011187	Channel #8
	Ant Coils	40011188	Channel #9
	Ant Coils	40011189	Channel #10
	Ant Coils	40011191	Channel #11
	Ant Coils	40011192	Channel #12
	Ant Coils	40011193	Channel #13
	RF, Mixer Grid & Osc. Coil	40011162	Channel #3
	RF, Mixer Grid & Osc. Coil	40011163	Channel #4
	RF, Mixer Grid & Osc. Coil	40011164	Channel #5
	RF, Mixer Grid & Osc. Coil	40011165	Channel #6
	RF, Mixer Grid & Osc. Coil	40011166	Channel #7
	RF, Mixer Grid & Osc. Coil	40011167	Channel #8
	RF, Mixer Grid & Osc. Coil	40011168	Channel #9
	RF, Mixer Grid & Osc. Coil	4001169	Channel #10
	RF, Mixer Grid & Osc. Coil	40011171	Channel #11
	RF, Mixer Grid & Osc. Coil	40011172	Channel #12
	RF, Mixer Grid & Osc. Coil	40011173	Channel #13
	Knob	45001901	Control (Mahogany)
	Knob	45001902	Control (Blonde)
	Knob	45001971	Control (Mahogany)
	Knob	45001972	Control (Blonde)
	Knob	45003651	Fine tuning
	Knob	45003661	Channek Selector (Mahogany)
	Knob	45003662	Channel Selector (Blonde)
	Knob	45003671	Horiz. Hold (Mahogany)
	Knob	45003672	Horiz. Hold (Blonde)
	Washer	62000603	Felt 2 Requried
	Safty Glass	45003731	Model RA-160
	Safety Glass	45003741	Model RA-162
	Cover	31017701	Vert & Horiz. Hold & Hi-Lo Signal Cover
	Back Panel	32002431	Model RA-162
	Cup	30014011	Back Panel For Picture Tube (Model RA-162)
	Back Panel	32002471	Includes Picture Tube Cover (Model RA-160)
	Mask Assembly	64006603	Model RA-160
	Mask Assembly	64006604	Model RA-162
	Mask	64006611	17"
	Mask	64006621	21"
	Gasket	70000800	Rubber

MISCELLANEOUS ADJUSTMENTS

ION TRAP MAGNET ADJUSTMENT

The Ion Trap magnet of this reciver is provided with two shunts for varying the strength of the magnet as an aid to securing better focus and maximum brightness.

Adjust as follows:

1. With receiver turned off place the magnet on the neck of the tube as in fig. 10.
2. Turn the set on and allow 30 seconds to warm up. Set contrast control at the mid-point of its range. Set the brightness for a raster that is just visible on the screen.
3. Slide magnet slowly back and forth on neck of tube and at the same time rotate it clockwise and counter clockwise until a position of maximum brightness is found. Then turn up the brightness control to normal viewing position and readjust magnet as before.
4. If magnet is not now in the position as shown in fig. 10, place one of the shunts on the magnet and repeat the above procedure.

PROP
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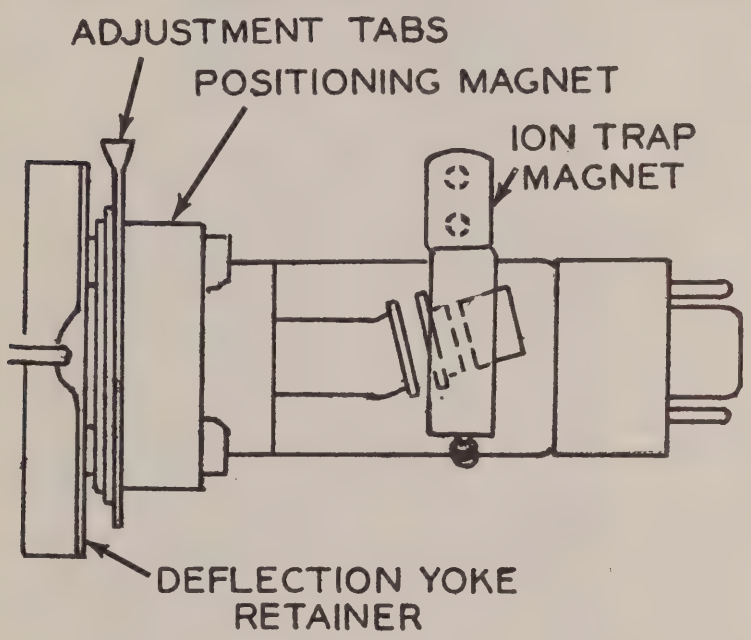


FIG. 10

PINCUSHION MAGNET ADJUSTMENT

To eliminate any pincushion of the raster the following procedure should be used:

1. Reduce the vertical size until the top of the raster is seen.
2. Pull the upper correction magnet fully back toward the rear of the picture tube and note the point of maximum pin cushioning.
3. Tilt the upper correction magnet fully forward and slide the magnet assembly to right or left until the magnets upward pull is applied at the point of maximum pin cushioning as noted in Step. 2.
4. Tilt the upper correction magnet away from the picture tube until top of raster straightens out.
5. Repeat above procedure with lower correction magnet.
6. Readjust vertical size control for proper height.

AGC ADJUSTMENT

SHOP ADJUSTMENT

1. Turn the receiver on and allow to warm up for a least 10 minutes.
2. Connect the DC probe of a VTVM to point A . Connect the common lead to chassis.
3. Set HIGH-LOW signal switch to high position .
4. Tune to all available channels and note meter reading for each.
5. Turn receiver to channel giving highest meter reading. Adjust the AGC control for -2 volts.
6. Check all available channels for increase in meter reading. If any increase is noted readjust the AGC control for 2 volts on channel giving highest reading.

FIELD ADJUSTMENT

1. Turn the receiver on and allow to warm up for a least 10 minutes.
2. Set HIGH-LOW signal switch in low position.
3. If all signals received are weak turn to strongest signal received. If both strong and weak signals are received tune to the strongest of the weak signals.
4. Turn AGC control clockwise until picture overloads, then counter clockwise until overloading disappears and picture is steady.

DISASSEMBLY INSTRUCTIONS

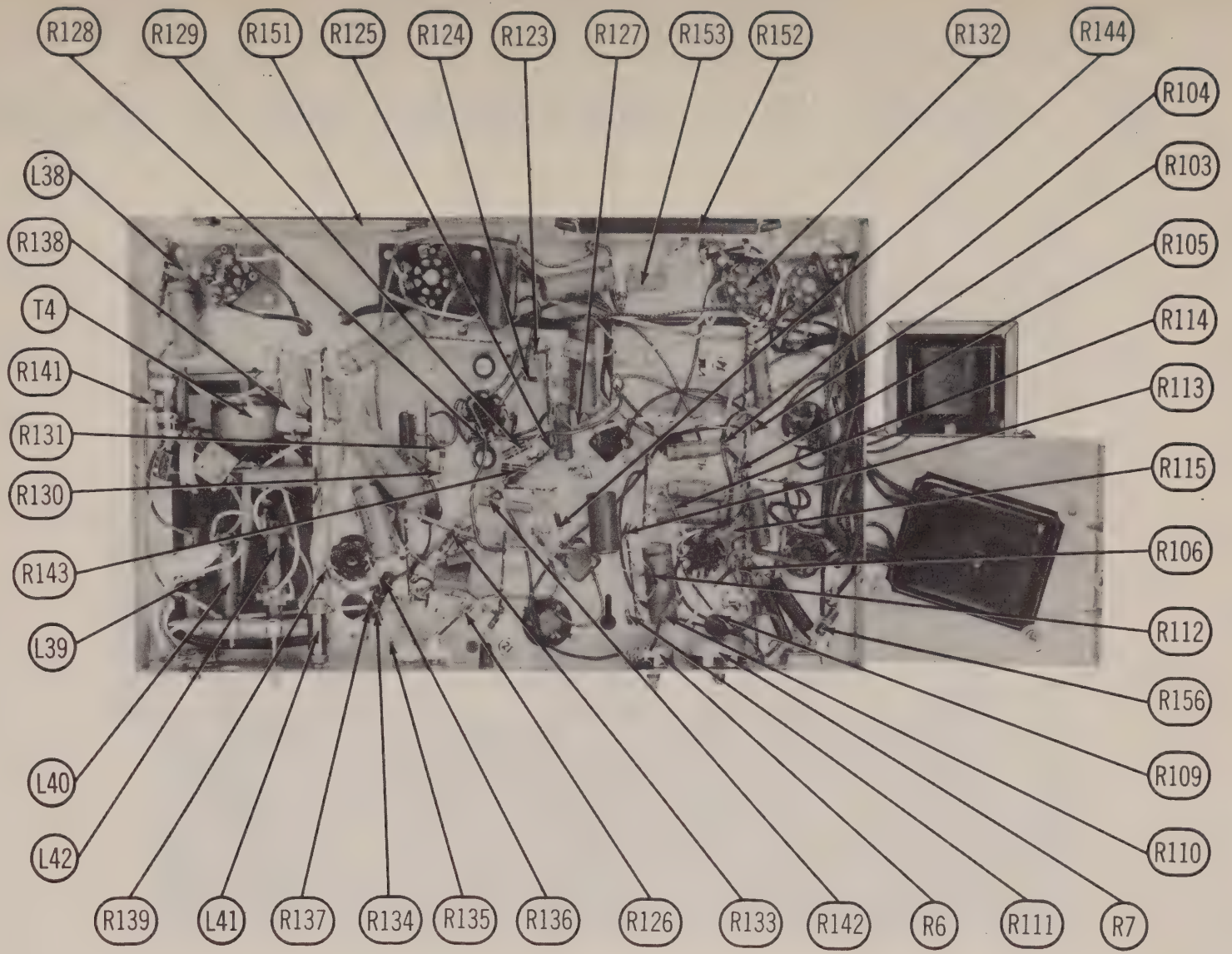
RF-IF CHASSIS

1. Remove 7 push on type control knobs from front panel.
2. Remove 9 wood screws. Remove rear cover.
3. Disconnect Crt. socket and speaker.
4. Remove 2 metal screws. Remove antenna bracket.
5. Disconnect inter-connecting cable from sweep schassis.
6. Remove 2 metal screws & clamps. Remove chassis. (Hold chassis while removing screws)
7. Remove 4 speaker nuts. Remove speaker.

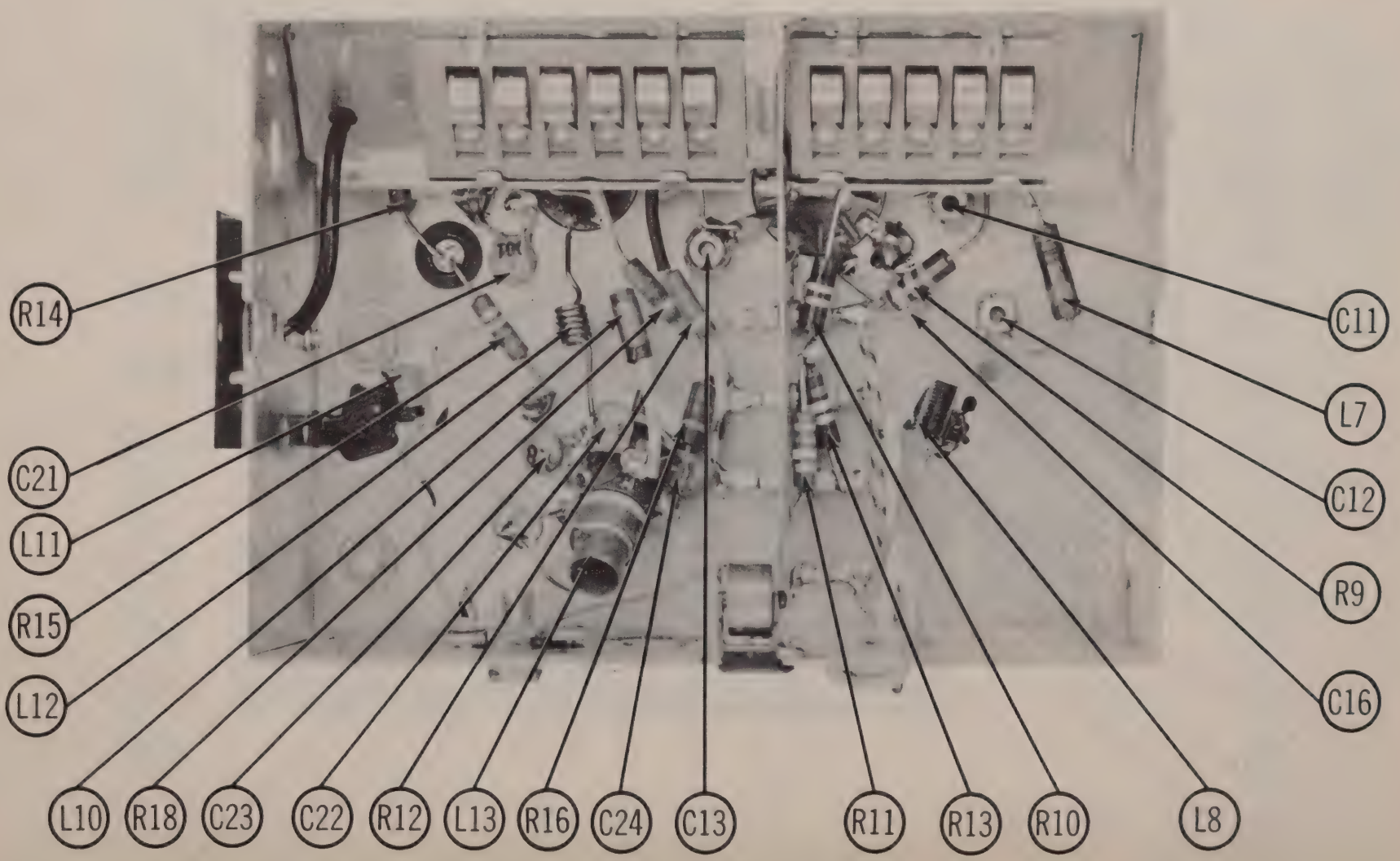
SWEEP CHASSIS

1. Disconnect deflection plug & HV lead.
2. Remove ground lead from Crt. Bracket.
3. Remove Crt ground from Crt. support.
4. Remove 5 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE SWEEP CHASSIS AS OUTLINED ABOVE.



SWEEP CHASSIS-BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RF TUNER-BOTTOM VIEW

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MODEL 7C52

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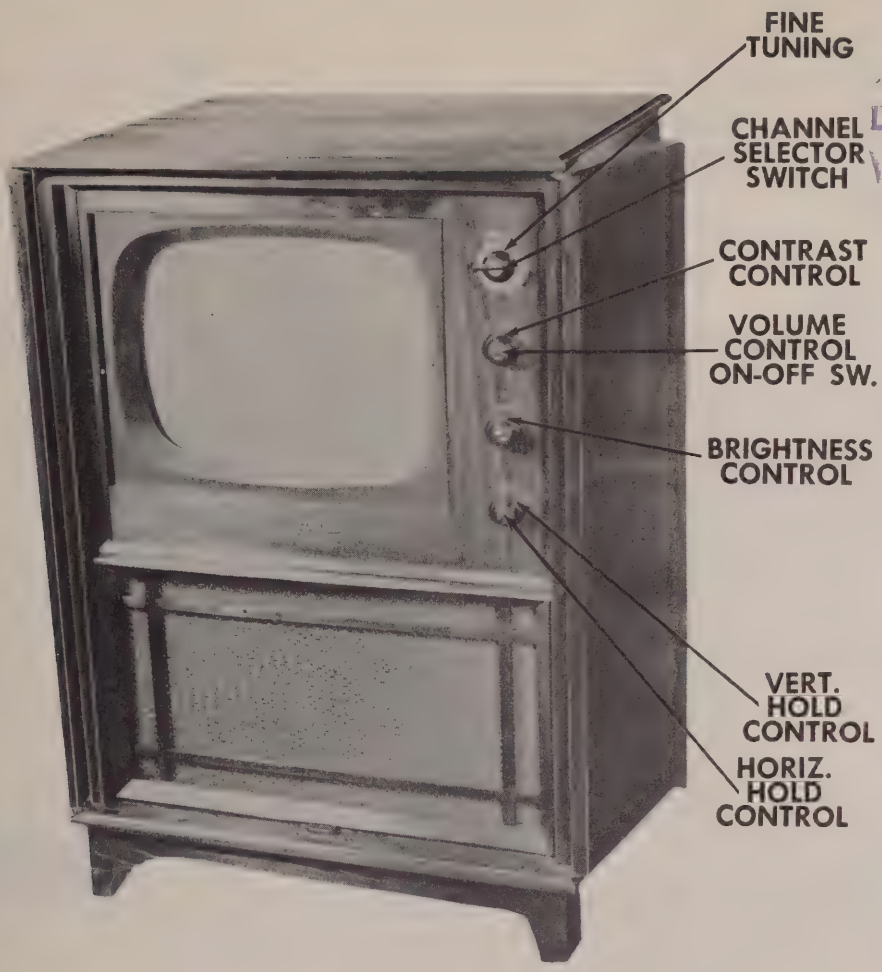

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FADA
MODELS 7C42, 7C52

FADA 7C52

TRADE NAME	Fada Models 7C42, 7C52
MANUFACTURER	Fada Radio & Electric Co., Inc., 525 Main St., Belleville, N.J.
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 2.3 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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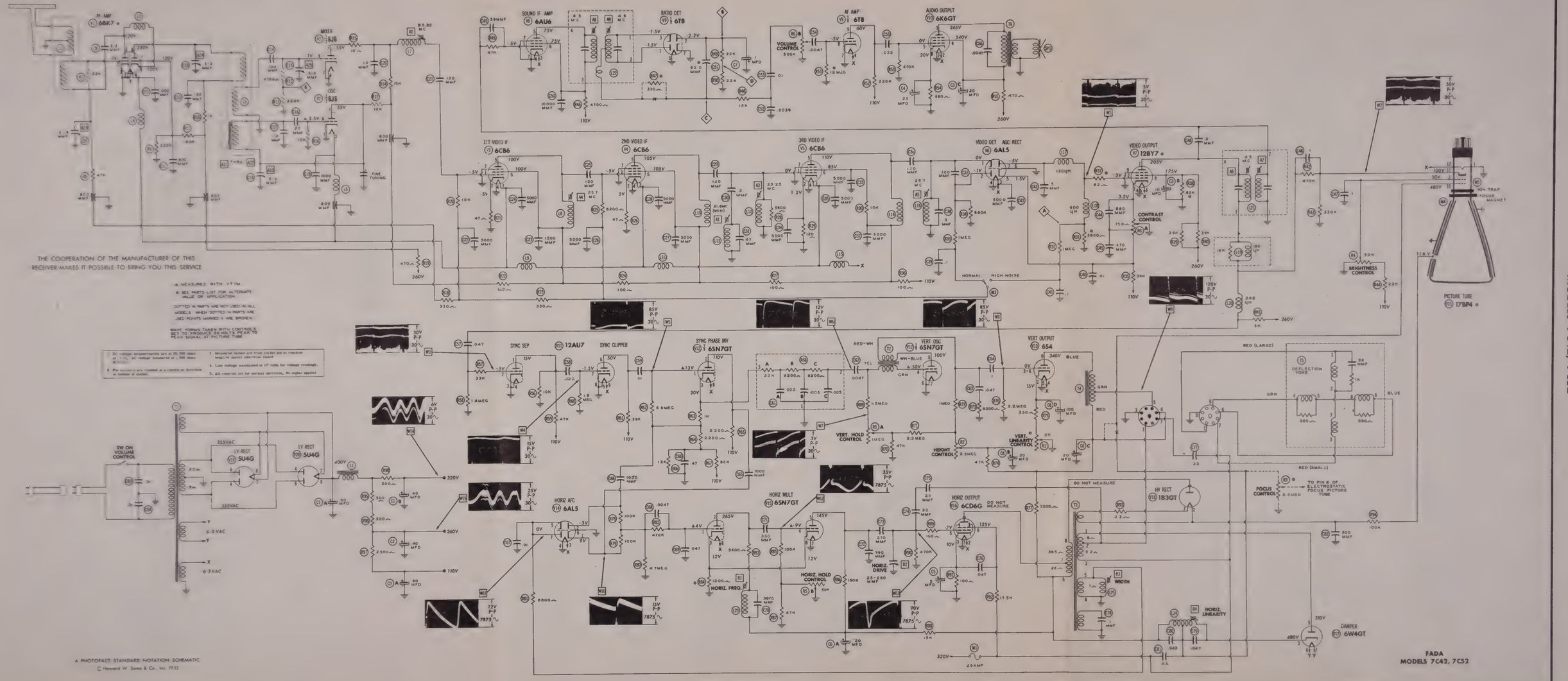
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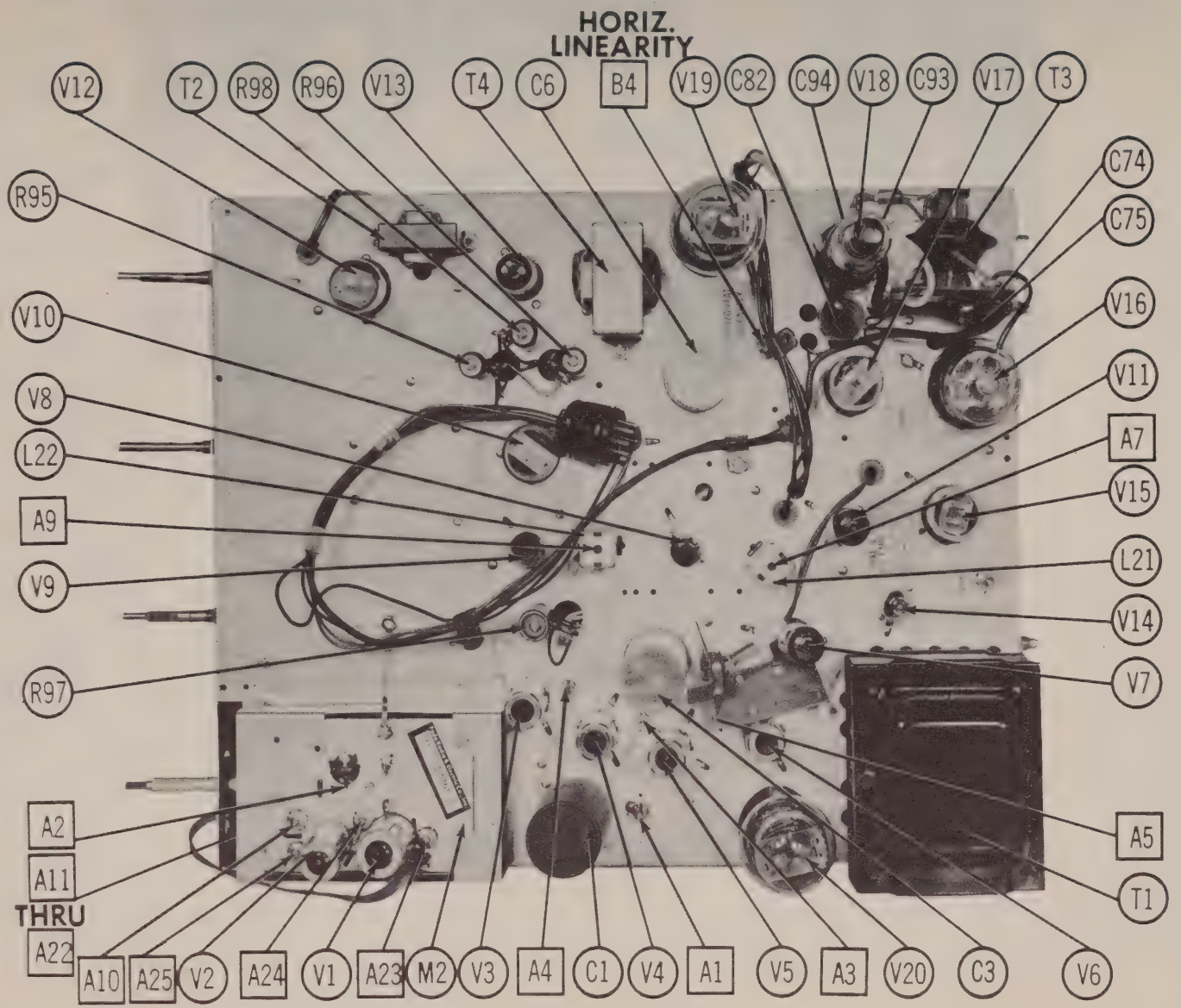

CHASSIS TOP VIEW

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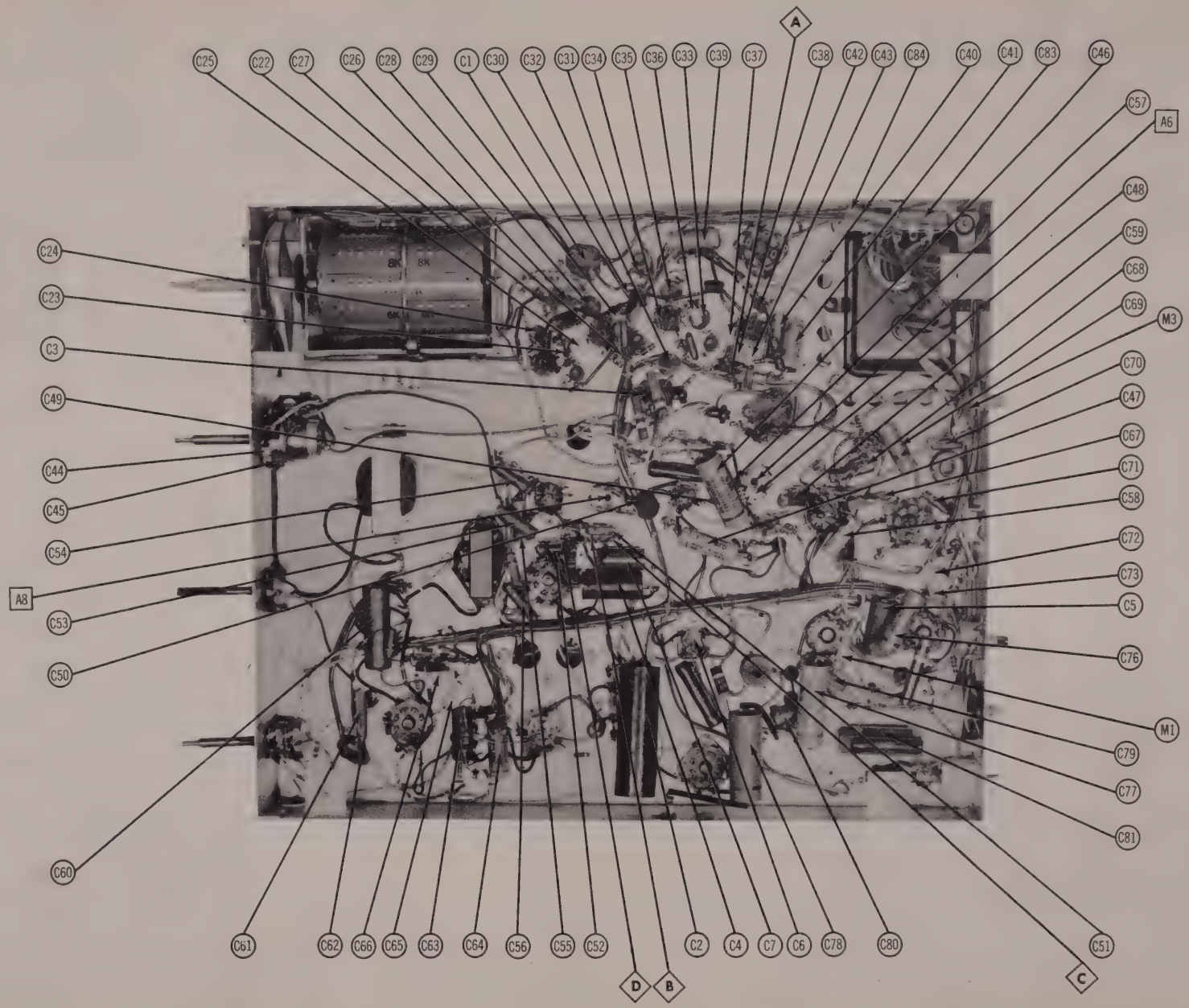
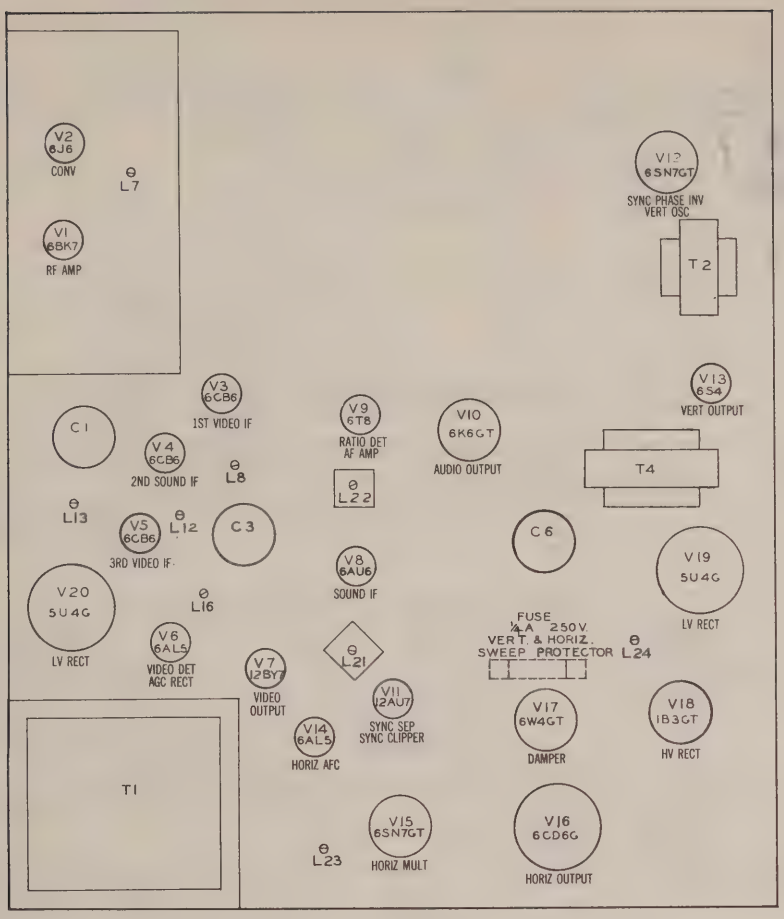


CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptons. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, No sound-R19, R20

LOSS OF PIC TURE OR SOUND
No pic, No sound, Has raster-V2, V3, V4, V5, V6, V7
No pic, No sound, Has snow-V1, V2, V3
No pic, Has sound, Has raster-V7, V21
Has pic, No sound-V8, V9, V10
Overloaded picture-V6

SYNC FAILURE
No vert. sync. -V12
No Hor. sync. -V12, V14, V15
No vert. or hor. sync. -V11, V12

SWEEP FAILURE
No raster, Has sound-V15, V16, V17, V18, V21 (Fuse (M1)
No vertical deflection-V13
Poor vert. linearity or foldover-V12, V13
Poor horiz. linearity or foldover-V15, V16, V17
Narrow picture-V15, V16, V17, V18, V19, V20
Vert off freq. -V12
Horiz. off freq. -V12, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 4.5 volt battery to the ungrounded side of C22. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.6MC (Unmod.)	Any	DC probe to point ◇A. Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	23.25MC	"	"	A2, A3	Adjust for maximum deflection. Attenuate generator output to maintain approximately 2.5 volts at VTVM.
3.	"	"	25.7MC	"	"	A4, A5	"

OVERALL VIDEO IF RESPONSE CHECK

Leave bias battery connected as under Video IF Alignment. If output of sweep generator is too low to give a usable indication on scope reduce the bias to 3 volts.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC Swp)	21.6MC 22.7MC 26.1MC	Any	Vert. amp. to point ◇A. Low side to chassis.		Check for response curve as per fig. 1. If necessary retouch A2 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to point ◇A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point ◇B. Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point ◇C. Common to point ◇D.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to point ◇A. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point ◇B. Low side to chassis.	A6, A7, A8	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as per fig. 2.
6.	"	"	"	"	"	Vert. amp. to point ◇C. Low side to chassis.	A9	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct for any individual channel. If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point ◇A. Low side to chassis.	A11	Adjust to place sound marker in notch as per fig. 4. Video marker should be at 50% of response.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A12	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A19	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A20	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A22	

ALIGNMENT INSTRUCTIONS (CONT.)

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DENVER, COLORADO

RF AND MIXER ALIGNMENT

Connect a 3 volt bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point E. Low side to chassis.	A23, A24, A25	Adjust for response curve similar to fig. 5. with markers above 90%.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13			Check all channels for response similar to fig. 5. If markers fall below 70% on any channel make slight compromise adjustment of A23, A24, and A25 with selector switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

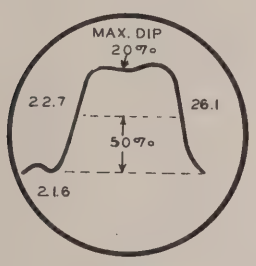


FIG. 1

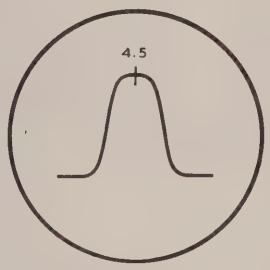


FIG. 2

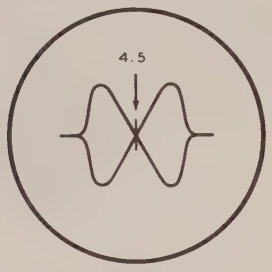


FIG. 3

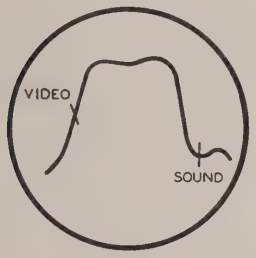


FIG. 4

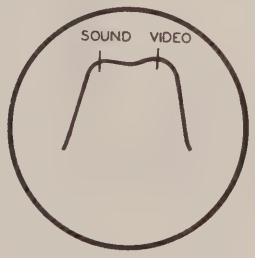
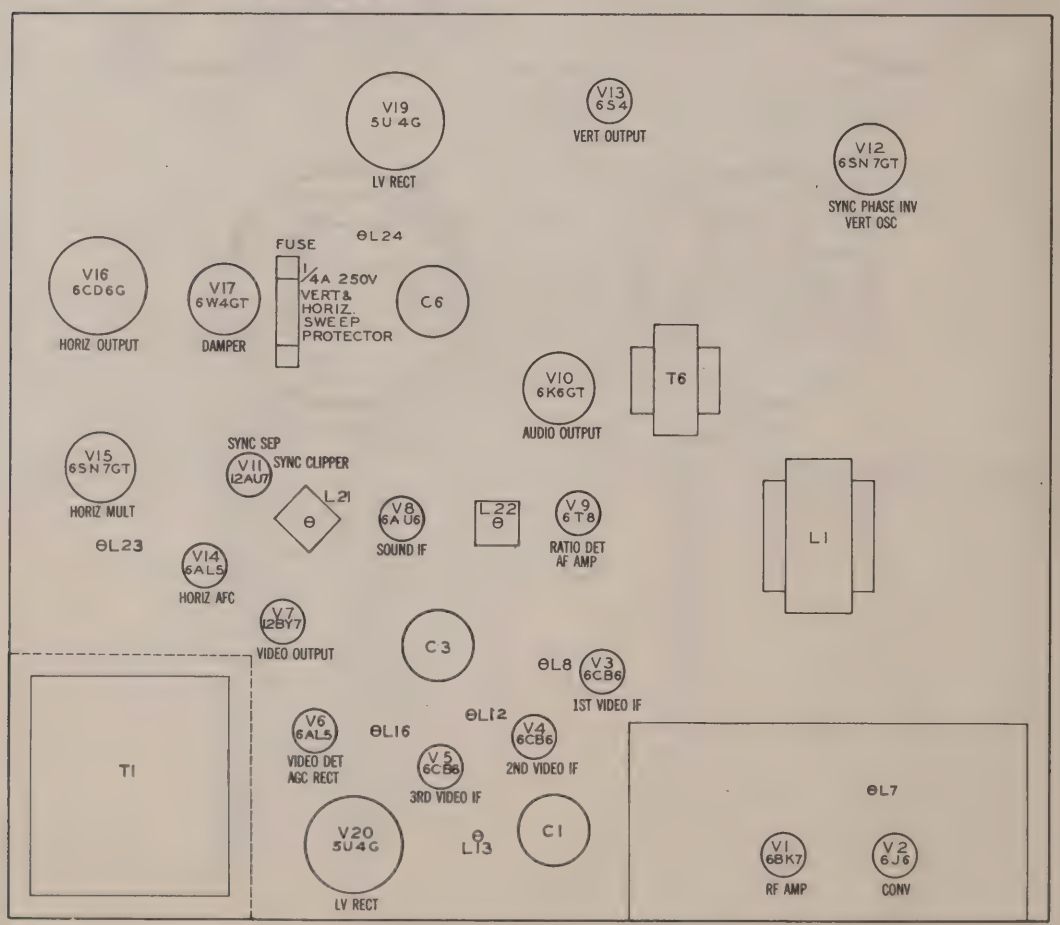


FIG. 5

RESISTANCE MEASUREMENTS

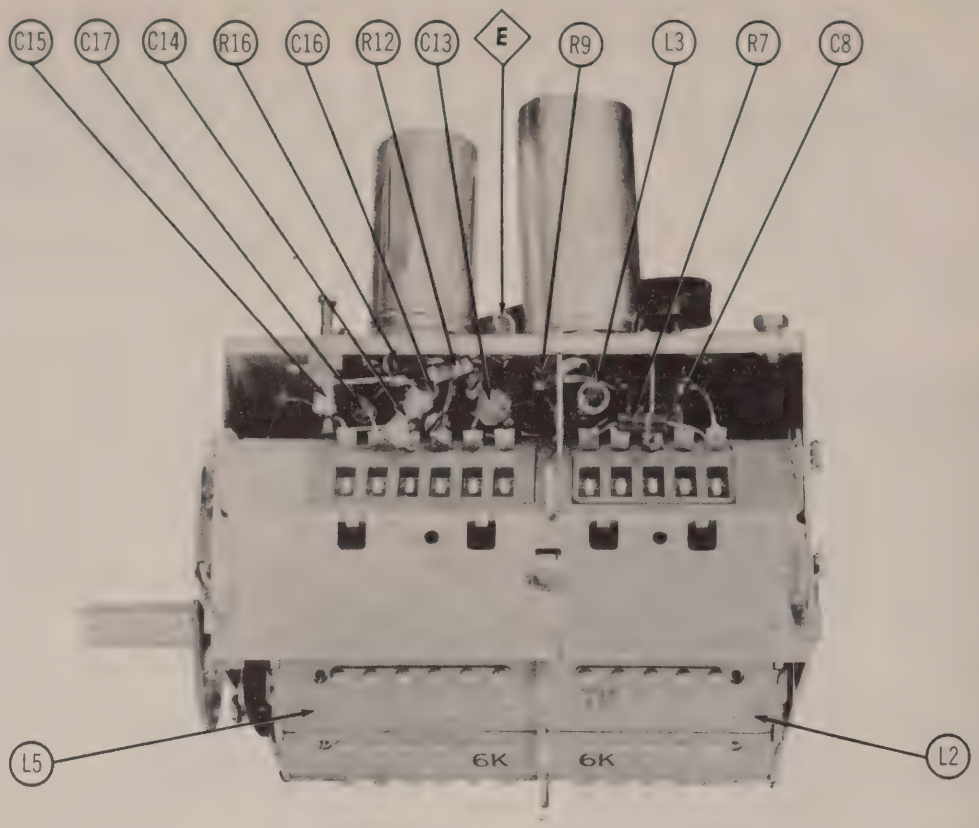
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	1.7Meg.	0Ω	.1Ω	0Ω	†2.5KΩ	†110KΩ	INF	0Ω
V 2	6J6	†14KΩ	†19KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1.7Meg	47Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 4	6CB6	1.7Meg	47Ω	.1Ω	0Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 5	6CB6	.3Ω	120Ω	.1Ω	0Ω	†3.6KΩ	†13KΩ	0Ω		
V 6	6AL5	.3Ω	680KΩ	.1Ω	0Ω	525Ω	0Ω	5.6KΩ		
V 7	12BY7	225Ω	5.7KΩ	0Ω	0Ω	0Ω	.1Ω	¶0KΩ	¶16KΩ	0Ω
V 8	6AU6	47KΩ	0Ω	.1Ω	0Ω	† 8.2KΩ	† 8.2KΩ	0Ω		
V 9	6T8	INF	44KΩ	INF	.1Ω	0Ω	INF	0Ω	12Meg	¶220KΩ
V 10	6K6GT	INF	.1Ω	†1.9KΩ	†1.4KΩ	470KΩ	INF	0Ω	#60Ω	
V 11	12AU7	9KΩ	1.8Meg	0Ω	0Ω	0Ω	†42KΩ	1.8Meg	0Ω	.1Ω
V 12	6SN6GT	6.8Meg	†5.7KΩ	15KΩ	2Meg	#1.8Meg	0Ω	0Ω	.1Ω	
V 13	6S4	INF	1.1KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	#9KΩ
V 14	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 15	6SN7GT	5.1Meg	#20KΩ	1.2KΩ	120KΩ	#165KΩ	1.2KΩ	0Ω	.1Ω	
V 16	6CD6G	INF	.1Ω	100Ω	470KΩ	470KΩ	INF	0Ω	†18KΩ	TOP CAP #34Ω
V 17	6W4GT	INF	INF	150KΩ	†560Ω	†566Ω	†560Ω	¶0Ω	¶.1Ω	
V 18	1B3GT	Pins 1-8 HAVE INF RESISTANCE								TOP CAP #419Ω
V 19	5U4G	INF	14KΩ	INF	19Ω	INF	20Ω	INF	14KΩ	
V 20	5A4G	INF	14KΩ	INF	20Ω	INF	19Ω	INF	14KΩ	
V 21	17BP4	0Ω	18KΩ	Pin 10 #3.2Ω	Pin 11 200KΩ	Pin 12 .1Ω				

ALL CONTROLS SET FOR NORMALOPERATION NO SIGNAL APPLIED
AGC SWITCH IN "NORMAL" AREA POSITION
† MEASURED FROM PIN 8 OF V 19 & PIN 2 OF V 20
# MEASURED FROM PIN 3 OF V17
¶ MEASURED FROM PIN 7 OF V17

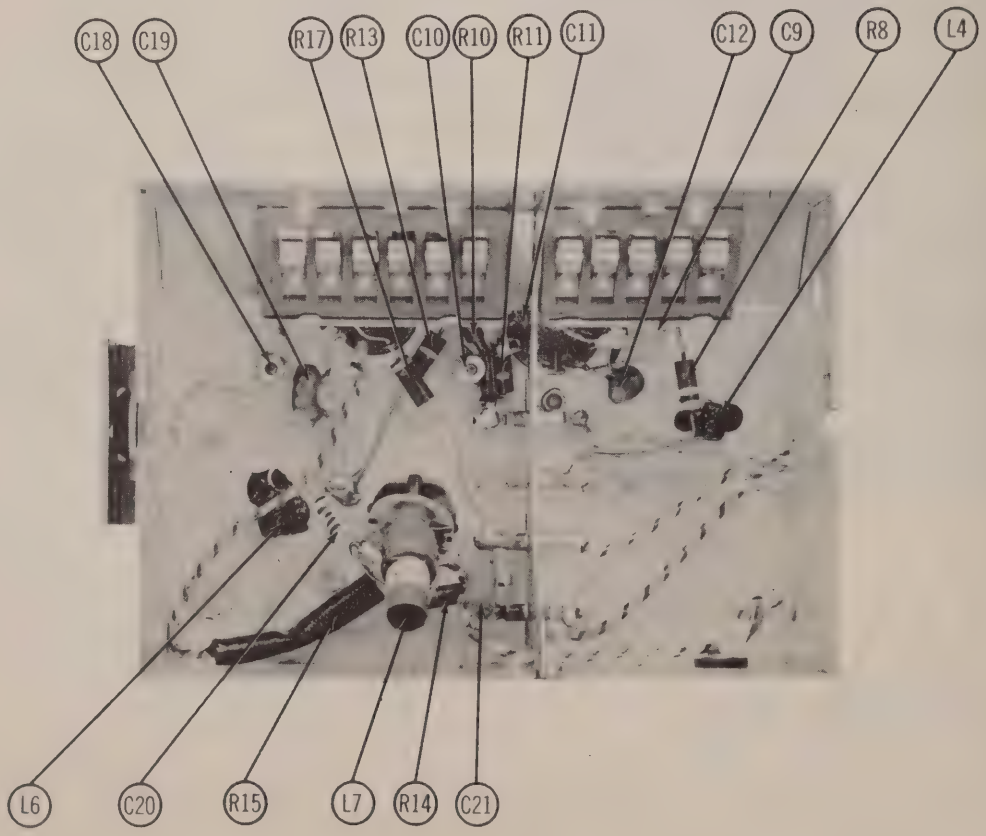


BOTTOM VIEW

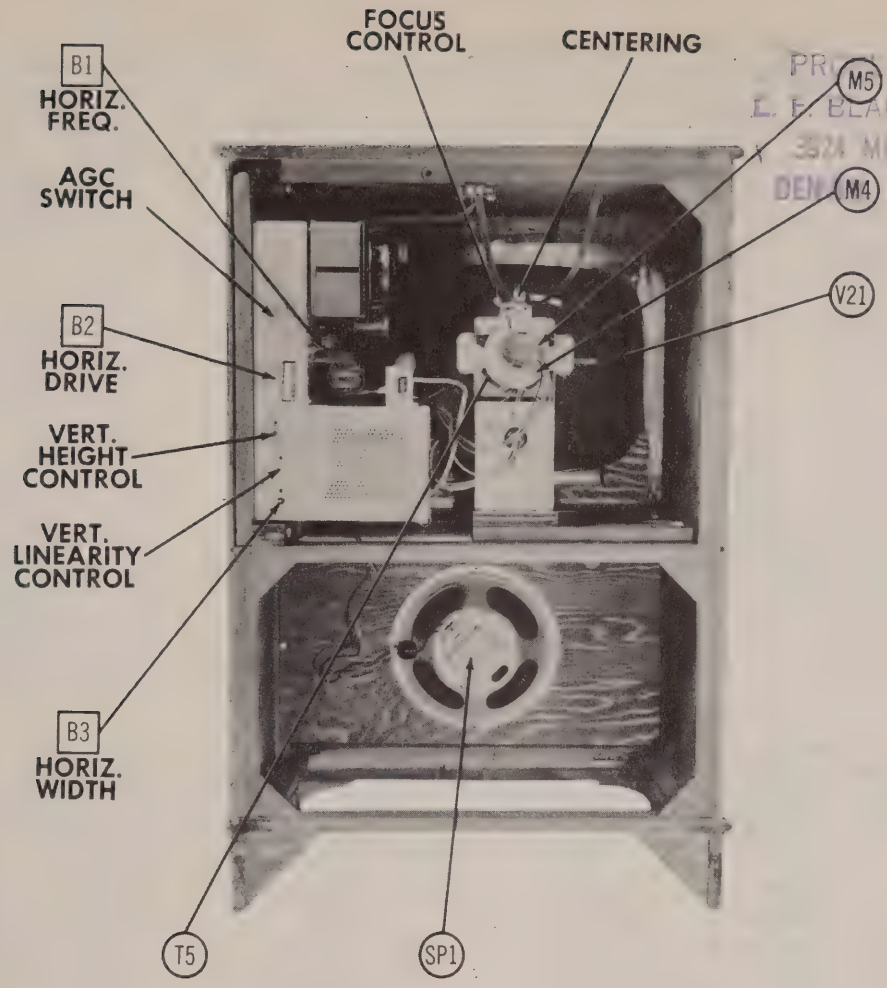
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold at the mid-position of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) to the maximum counter clockwise position without the presence of a vertical white line in the picture.

Adjust the width slug (B3) for a picture slightly wider than enough to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push on type control knobs from front panel.
2. Remove 11 wood screws. Remove rear cover.
3. Disconnect built-in antenna, deflection and focus plugs, CRT socket, speaker and HV lead.
4. Remove 2 wood screws. Remove antenna bracket.
5. Remove 4 nuts. Remove speaker.
6. Remove 2 mounting bracket bolts. Remove mounting board from cabinet.
7. Remove 4 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FADA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BK7	6BK7	9AJ	
B	RF Amplifier	6BQ7	6BQ7	9AJ	
V3	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7A	Video Output	12BY7	12BY7	9BP	
B	Video Output	6AG7	6AG7	8Y	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector-RF Amplifier	6T8	6T8	9K	
V10	Audio Output	6K6GT	6K6GT	7S	
V11	Sync. Seperator--Sync. Clipper	12AU7	12AU7	9A	
V12	Sync. Phase Inv.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V13	Vert. Output	6S4	6S4	9AC	
V14	Horiz. AFC	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6CD6G	6CD6G	5BT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20	LV Rectifier	5U4G	5U4 G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: FADA PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V21A	17BP4	17BP4		12D	① Circuit changes necessary.
		17BP4A		12D ①	
		17HP4		12C ①	
B	17RP4	17PP4		12C ①	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	475	22.79	AFH2-Y2		UPT6450		FP262	TVL-2830	
B	▲40	475								
C2	40	450	22.82	PRS450/40		BR4045A		TC78	TVA-1712	
C3A	■30	350	22.80D	AFH3-43		UPT245-835		FP450	TVL-4675	
B	▲10	350		PRS450/30		BR1035A				
C	▲20	450								
C4	25	50	22.56	PRS50/25		BR255A		TC38	TVA-1306	
C5	5	50	22.56	PRS50/4		BR550		TC30	TVA-1303	
C6A	■20	450	22.81	AFH4-80		UP22245V10		FP437	TVL-3780	
B	▲20	450							TVA-1310	
C	▲20	450								
D	100	50								
C7	1	150	22.70	PRS150/4		BR415		TC40	TVA-1402	
C8	3.2				TCZ-3.2		NP0K-2R2		5TCCB-V22	
C9	3-9				829-10					
C10	.5-3				829-3			CT565A		
C11	800			BPD-0008	DD-801	TMST8	801-001	DC-521	5HK-D1	
C12	1000			SI1000	D6-102	TMSD1	GP2L-102	UC-521	5HK-D1	
C13	120			SI120	D6-121	TMST12	GP2K-121	UC-5312	5GA-T12	
C14	100			SI100	D6-101	TMST1	GP1K-101	UC-531	5GA-T1	
C15	.5-3				829-3			CT565A		
C16	20			SI20NPO	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C17	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C18	.5-3				829-3			CT565A		
C19	1000			SD000	D6-102	TMSD1	GP2L-102	UC-521	5HK-D1	
C20	10			SU10NPO	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C21	120			SU120	D6-121	TMST12	GP2K-121	UC-5312	5GA-T12	
C22	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C23	1500		17.45	SU500	D6-152	TMSD15	GP2L-152	UC-5215	5HK-D15	
C24	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C25	120		17.106	SU120	D6-121	TMST12	GP2K-121	UC-5312	5GA-T12	
C26	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C27	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C28	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C29	120		17.106	SU120	D6-121	TMST12	GP2K-121	UC-5312	5GA-T12	
C30	3		17.137		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C31	47		17.130		TCZ-47		NP0L-470		5TCC-Q47	
C32	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C33	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C34	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C35	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C36	120		17.106	SU120	D6-121	TMST12	GP2K-121	UC-5312	5GA-T12	
C37	120		17.106	SU120	D6-121	TMST12	GP2K-121	UC-5312	5GA-T12	
C38	3		17.131	SI3NPO			NP0K-030	ZT-553		
C39	.1	200	12.49	P288-1	DF-104	PT2P1		PT401	2TM-P1	
C40	.01	200	17.72	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C41	.1	200	12.49	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C42	5000		17.44	BPD-005	DD-502	TMSD5	811-005	DC-525	5HK-D5	
C43	5		17.79	SI5	TCZ-4.7	5W5V5	GP1K-050	ZT-555	5GA-V5	
C44	680		17.102	SI680	D6-681	2R5T7	GP2K-681	UC-5368	5GA-T68	
C45	470		17.107	SI470	D6-471	5R5T5	GP1K-471	UC-5347	5GA-T47	
C46	.1	600	12.80	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C47	.1	400	12.75	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C48	2		17.59		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C49	39		17.105	SD39	D6-390	5W5Q4	GP1K-390	UC-5433	5GA-Q39	
C50	10000		17.80	SPD-01	DD-103	TMS81	821-01	DC-511	5HK-S1	
C51	630	500	17.135							Note 1
C52	.0039	400	12.71	P388-004	D6-402	PTE3D4	GP2-333-402	PT624	3TM-D4	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	.01	400	12.72	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C54	.0047	400	12.68	P488-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C55	.022	400	12.82	P488-002	DF-203	PTE4S22		PT4122	4TM-S22	
C56	.0047	600	12.83	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C57	.047	400	12.67	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C58	.022	400	12.82	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C59	.01	400	12.72	P488-01	D6-103	GP2-333-103		PT411	4TM-S1	
C60	.47	200	12.92	P288-47		PJ2P5		PT405	2TM-P47	
C61A	.002			P688-002		PTE6D2		PT622		
B	.005		●187.1	P688-005	●PC-100	PTE6D5	●1405-01	PT625	●101C1	
C	.005			P688-005		PTE5D5		PT625		
C62	.0047	600	12.68	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C63	.047	400	12.67	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C64	.1	400	12.75	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C65	1000		17.109	SU1000	D6-102	TMSD1	GP2L-102	UC-521	5HK-D1	
C66	1000		17.109	SU1000	D6-102	TMSD1	GP2L-102	UC-521	5HK-D1	
C67	.01	400	12.72	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C68	.0047	600	12.68	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C69	.047	400	12.67	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C70	3900	500	17.113	1464-004		1DR5D4		MCB463		
C71	330	500	17.69	1469-00035						
C72	390	500	17.38	1469-0004		5R5T4		MCB243	MS-34	
C73	270	500	17.123	1469-0003		5R5T3		MCB241	MS-33	
C74	20	1500	17.124							
C75	20	1500	17.124							
C76	.047	600	12.66	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C77	.22	400	12.77	P488-22		PTE4P22		PT4025	2TM-P22	
C78	1.	200	12.115			PJ2W1		PT41	2TM-M1	
C79	.047	400	12.67	P488-047		PTE4S47		PT4147	4TM-S47	
C80	.033	400	12.94	P488.003				PT4133		
C81	.22	400	17.77	P488-22		PTE4P22		PT4025	4TM-P22	
C82	500	20000	17.116	HV20C	TV3-502	MM-C20T5	413-501	HV-10035	20DK-T5	
C83	.01	400	12.72	192ZGXY-01		PJ4S1		PT411	4TM-S1	
C84	.01	400	12.72	192ZGXY-01		PJ4S1		PT411	4TM-S1	

Note 1 Some models use 330 MMF in this application.
● Items C61A, C61B, C61C, R68A, R68B, R68C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FADA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5000Ω	2	D220076G20	W-5000	A43-5000	VK-135	R5000L	Vert Linerity - Note 1.
B	Shaft		Not Req.	Not Req.	FK8-1/4	Not Req.	Not Req.	Attach to R1A
R2A	2.5Meg	½	52.24	Q11-239	AG-84-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R2A
R3	2.5Meg	½	52.74					Focus-Note 2
R4A	50KΩ	½	52.69	Q11-123	AG-44-S	B-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
R5A	1 Meg	½	52.68	QJ-168*	RTV-110	SBB-510	UF16L	Vert Hold-Panel
B	50KΩ	½					UR54L	Horiz. Hold-Rear
R6A	750Ω	2	52.64	QJ-270**	RTV-109		WF751-T251	Contrast-Tapped ② 500Ω Wire Wound - Panel
B	500KΩ	½					UR55A	Volume-Rear
C	Switch						US-26	Attach to R6B

Note 1. Some models use alternate control (Part #5268)
Note 2. In receivers using 17BP4's R3 is omitted.
* CONCENTRIKIT EQUIVALENT - KIT K-3, BASE ELEMENTS & SHAFTS B11-137 & P1-126 (Panel), B11-123 & R1-212 (Rear).
** CONCENTRIKIT EQUIVALENT - KIT K-3, BASE ELEMENTS & SHAFTS W17-105X & P4-124 (Panel) B13-133 & R1-212 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FADA PART No.	IRC PART No.	NOTES
R7	22KΩ	½			
R8	47KΩ	½			
R9	220KΩ	½		BTS-220K	
R10	1000Ω	½		BTS-1000	
R11	180KΩ 5%	½		BTS-180K 5%	
R12	4700Ω	½		BTS-4700	
R13	220KΩ	½		BTS-220K	
R14	15KΩ	½		BTS-15K	
R15	10Ω	½			
R16	10KΩ	½			
R17	10KΩ	½			
R18	330Ω	½		BTS-330	
R19	470Ω	½		BTS-470	
R20	10KΩ	½	32.11		
R21	47Ω	½	32.197		
R22	100Ω	½	32.2	BTS-100	
R23	330Ω	½	32.67	BTS-330	
R24	100Ω	½	32.2	BTS-100	
R25	8200Ω	½	32.77		
R26	47Ω	½	32.197		
R27	100Ω	½	32.2	BTS-100	
R28	5600Ω	½	32.126		
R29	120Ω	½	32.118	BTS-120	
R30	10KΩ	½	32.11	BTS-10K	
R31	5600Ω	½	32.126	BTS-5600	Note 1
R32	1Meg	½	32.33	BTS-1Meg	
R33	1Meg	½	32.33	BTS-1Meg	
R34	680KΩ	½	32.35	BTS-680K	
R35	39KΩ	1	32.103	BTA-39K	
R36	100Ω	½	32.2	BTS-100	
R37	82Ω	½	32.135	BTS-82	Note 2
R38	82KΩ	1	32.412	BTA-82	Note 3
R39	39KΩ	2	32.660	BTB-39K	
R40	39KΩ	2	32.660	BTB-39K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	IRC PART No.	NOTES
R41	5000Ω	10	117.80	1 3/4A-5000	
R42	470KΩ	½	32.92	BTS-470K	
R43	330KΩ	½	32.205	BTS-330K	
R44	22KΩ	½	32.183	BTS-22K	
R45	47KΩ	½	32.15	BTS-47K	
R46	4700Ω	1	32.74	BTA-4700	
R47	330Ω	½	32.67	BTS-330	Note 4
R48	15KΩ	½	32.12	BTS-15K	
R49	22KΩ	½	32.13	BTS-22K	
R50	22KΩ	½	32.13	BTS-22K	
R51	12Meg	½		BTS-12Meg	Note 5
R52	220KΩ	½	32.18	BTS-220K	
R53	470KΩ	½	32.92	BTS-470K	
R54	680Ω	1	32.115	BTA-680	
R55	470Ω	1	32.399	BTA-470	
R56	10KΩ	½	32.11	BTS-10K	
R57	33KΩ	½	32.14	BTS-33K	
R58	1.8Meg	½	32.208	BTS- 1.8Meg	
R59	47KΩ	½	32.15	BTS - 47K	
R60	1.8Meg	½	32.208	BTS-1.8Meg	
R61	39KΩ	1	32.103	BTA-39K	
R62	6.8Meg	½	32.46	BTS-6.8Meg	
R63	1000Ω	½	32.8	BTS-1000	
R64	2200Ω	½	32.80	BTS-2200	
R65	2200Ω	½	32.80	BTS-2200	
R66	12KΩ	1	32.142	BTA-12K	
R67	68KΩ	1	32.411	BTA-68K	
R68A	22KΩ	½		BTS-22K	
B	8200Ω	½	●167.1	BTS-8200	
C	8200Ω	½		BTS-8200	
R69	1.5Meg	½	32.147	BTS-1.5Meg	
R70	47KΩ	½	32.15	BTS-47K	
R71	2.2Meg	½	32.34	BTS-2.2Meg	
R72	1 Meg	½	32.33	BTS-1Meg	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FADA PART No.	IRC PART No.	NOTES
R73	8200Ω	½	32.77	BTS-8200	
R74	47KΩ	½	32.15	BTS-47K	
R75	330Ω	½	32.67	BTS-330	
R76	2.2Meg	½	32.34	BTS-2.2Meg	
R77	7500Ω	10	117.81	1 3/4A-7500	
R78	100KΩ	½	32.39	BTS-100K	
R79	100KΩ	½	32.39	BTS-100K	
R80	4.7Meg	½	32.98	BTS-4.7Meg	
R81	6800Ω	½	32.10	BTS-6800	
R82	470KΩ	½	32.92	BTS-470K	
R83	5600Ω	½	32.126	BTS-5600	
R84	1200Ω 5%	½	32.283	BTS-12005%	Note 6
R85	100KΩ	½	32.89	BTS-100K	
R86	150KΩ	½	32.90	BTS-150K	
R87	47KΩ	½	32.15	BTS-47K	
R88	15KΩ	2	32.655	BTB-15K	
R89	100Ω	½	32.2		
R90	470KΩ	½	32.92	bTS-470K	
R91	100Ω	2	32.635	BW-2-100	
R92	17.5KΩ	10	117.71	1 3/4A-17.5K	
R93	3.3Ω	½	32.62		
R94	100KΩ	1	32.373		
R95	500Ω	20	117.74	2D-500	
R96	500Ω	20	117.74	2D-500	
R97	500Ω	30	117.74	2D-500	
R98	2500Ω	25	117.83	4 ½E-2500	

● Items R68A, R68B, R68C, C61A, C61B, C61C are combinedin one unit.
Note 1. Some models use a 8200Ω resistor in this application.
Note 2. Some models use a 120Ω resistor in this application.
Note 3. Some models use a 39KΩ resistor in this application.
Note 4. Not used in all models.
Note 5. Some models use a 10Meg resistor in this application.
Note 6. Some models use a 1500Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC ② 2.3A	710VCT	5VAC ③ 6 A	6.3VAC ④ 8.7A SEC. 4 6.3VAC ④ 1.2A	42.61		P-3059 ①	TP-360	R-37BC

① Parallel both 5V windings.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	130Ω	1100Ω	42.53	A-8111	A-3000	TB0-1 ①	A97X	Vert. osc. trans. Horiz. output trans.
T3	41Ω Tap ② 26Ω	6Ω Tap ③ 5.2Ω Sec. #2 .7Ω Sec. #3 0Ω Sec. #4 0Ω	37.255		HVO-7 ②			
T4	1480Ω Tap ④ 10.5Ω	14Ω 65Ω	42.62 37.261	A-8123	A-3037 DY-8	TB0-5③ ④	A-99X ③	Vert. output trans. Horiz. Deflection Coils Vert. Deflection Coils
T5A					MDF-70	TY-3	Y-17	
B								

1. Mount on top of chassis.
2. Drill new mtg. holes.
3. Drill one new mtg. hole.
4. Tie red & green leads together.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	4.5KΩ	3.7Ω	375Ω	.4Ω	42.57	A-3877	A-2930	RO-8	S-3X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: FADA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.7Ω	107.47	ST-119 Mod. P10-T	10A31	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: FADA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.250A	60Ω	1.5HY	42.56	C-2326 ①	C-2990①	TR-733 ①	C-17X①

① Drill one new mtg. hole.

FADA
MODELS 7C42, 7C52

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FADA PART No.	MERIT PART No.	
L2	Ant. Coils	0Ω	0Ω			
L3	RF Choke	0Ω				
L4	Fil. Choke	0Ω				
L5	RF, Mixer Grid and Osc. Coils	0Ω				
L6	Fil. Choke	0Ω				
L7	1st. Video IF	1Ω			TV-103	
L8	2nd. Video IF	.3Ω		37.99	TV-102 or TV-112	
L9	Fil. Choke	0Ω		37.89		
L10	RF Choke	1.8Ω		37.197		
L11	Fil Choke	0Ω		37.89		
L12	3rd. Video IF	.3Ω		37.99	TV-102 or TV-112	
L13	Sound Trap	0Ω		37.268	TV-150	
L14	RF Choke	1.8Ω		37.197		
L15	Fil. Choke	0Ω		37.89		
L16	4th Video IF	.3Ω		37.99	TV-102 or TV-112	
L17	Peak. Coil	4.8Ω		37.234		120 Microhenries
L18	Peak. Coil	12.5Ω		37.235	TV-188	600 Microhenries
L19	Peak. Coil	6.5Ω		37.236	TV-184*	190 Microhenries wound on 18KΩ resistor
L20	Peak. Coil	7.1Ω		37.237	TV-185	245 Microhenries
L21	Sound IF	2Ω	2Ω	37.252	TV-113	
L22	Ratio Det.	5.3Ω	1.9Ω	37.253	TV-115	Tertiary .75Ω
L23	Hor. Osc.	60Ω		37.233	TV-163	
L24	Hor. Lin.	8Ω	4.8Ω	37.250		
L25	Hor. Width	2.3Ω		37.248	MWC-2	

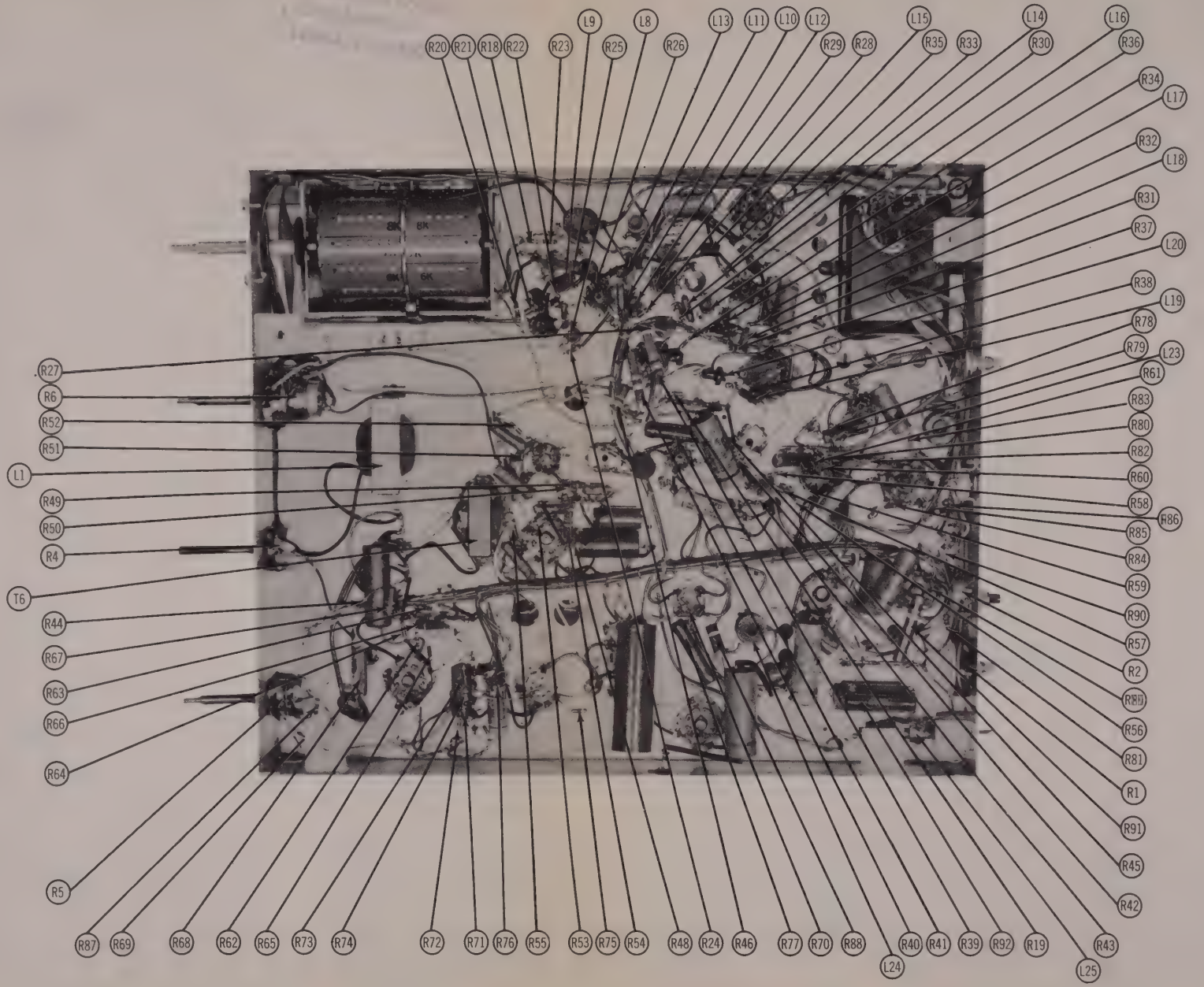
* Parallel with 18KΩ resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FADA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1/4A 250V			318.250 (1/4A-P/T)		GJV-1/4A	

MISCELLANEOUS

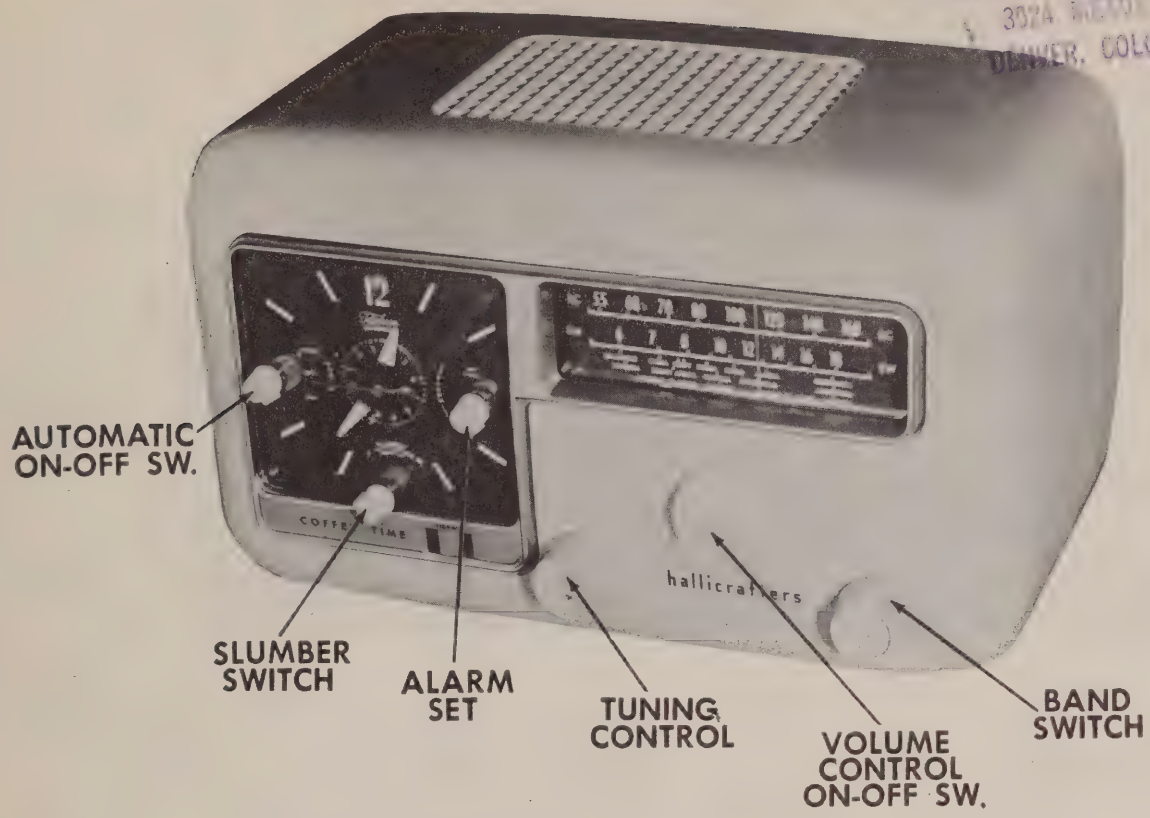
ITEM No.	PART NAME	FADA PART No.	NOTES
M2	RF Tuner	42.71	
M3	Switch		AGC (Normal & Noise Area Selector)
M4	Focus Magnet	112.26	
M5	Ion. Trap	112.23	
B2	Trimmer	132.18	Horiz. Drive (25-280MMF)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

L. F. [illegible]
3524 [illegible] ST.
DENVER, COLORADO

HALLICRAFTERS
MODELS 5R50, 5R51, 5R52



HALLICRAFTERS
MODELS 5R50, 5R51, 5R52

HALLICRAFTERS MODEL 5R50

TRADE NAME	Hallicrafters Models 5R50, 5R51, 5R52 (Run 1)
MANUFACTURER	Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Ill.
TYPE SET	AC Operated 2 Band AM Superheterodyne Receiver With Electric Clock.
TUBES (FIVE)	Types 12SA7 (or) 12BE6 Conv., 12SK7 (or) 12BA6 IF Amp., 12SQ7 (or) 12AV7 Det.-AVC-AF Amp., 50L6GT (or) 50C5 Audio Output, 35Z5GT (or) 35W4 Rectifier.
POWER SUPPLY	110-120 Colts AC-60 Cycle
RATING	.270 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC
SHORT WAVE	6-18 MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher that necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1.	.01MFD	High side to stator plates of rear section of tuning gang. Low side to chassis.	455KC (400∿Mod)	Broadcast	1000KC	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	High side through dummy to terminal A1 on antenna terminal strip. Low side to chassis.	14MC	Shortwave	14MC	"	A5, A6	"
3.	"	"	1300KC	Broadcast	1300KC	"	A7, A8	"
4.	"	"	600KC	"	600KC	"	A9	"

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PARTS LIST AND DESCRIPTIONS

HALLICRAFTERS
MODEL 5R50

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	Converter	90X12SA7	12SA7	8R	
B	Converter	90X12BE6	12BE6	7CH	
V2A	IF Amplifier	90X12SK7	12SK7	8N	
B	IF Amplifier	90X12BA6	12BA6	7BK	
V3A	Det.-AVC-AF Amp	90X12SQ7	12SQ7	8Q	
B	Det.-AVC-AF Amp.	90X12AV7	12AV7	7BT	
V4A	Audio Output	90X50L6GT	50L6GT	7AC	
B	Audio Output	90X50C5	50C5	7CV	
V5A	Rectifier	90X35Z5GT	35Z5GT	6AD	
B	Rectifier	90X35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	90	150	45B197	PRS150/80-40-20		ELD4415C		FP324	TVA-3438	Red
B	60	150				BR6015				Blue
C	20	25		PRS25/25						Yellow
C2	100		47X20UJ101K	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C3	50		47X20UJ500K	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C4	.05	200	46AU503J	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5	5600	500	47X30A562K							
C6	10000		47A217	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C7	.05	200	46AU503J	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	.05	200	46AU503J	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C9A	100		♦49A016	SI100	♦PC-50	TM5T1	♦1403-01	UC-531	♦100C1	
B	100			SI100		TM5T1		UC-531		
C10	10000		47A217	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C11	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	Note 1
C12	10000		47A217	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C13	10000		47A217	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C14	10000		47A217	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C15	.05	600				NF10170			72P51	Note 2

Note 1 Some models use .001MFD in this application (Part No. 46AZ102J)
Note 2 Resonate capacitor. Replace with same type
♦ Items C9A, C9B, R9 are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	25B965	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	K8S-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

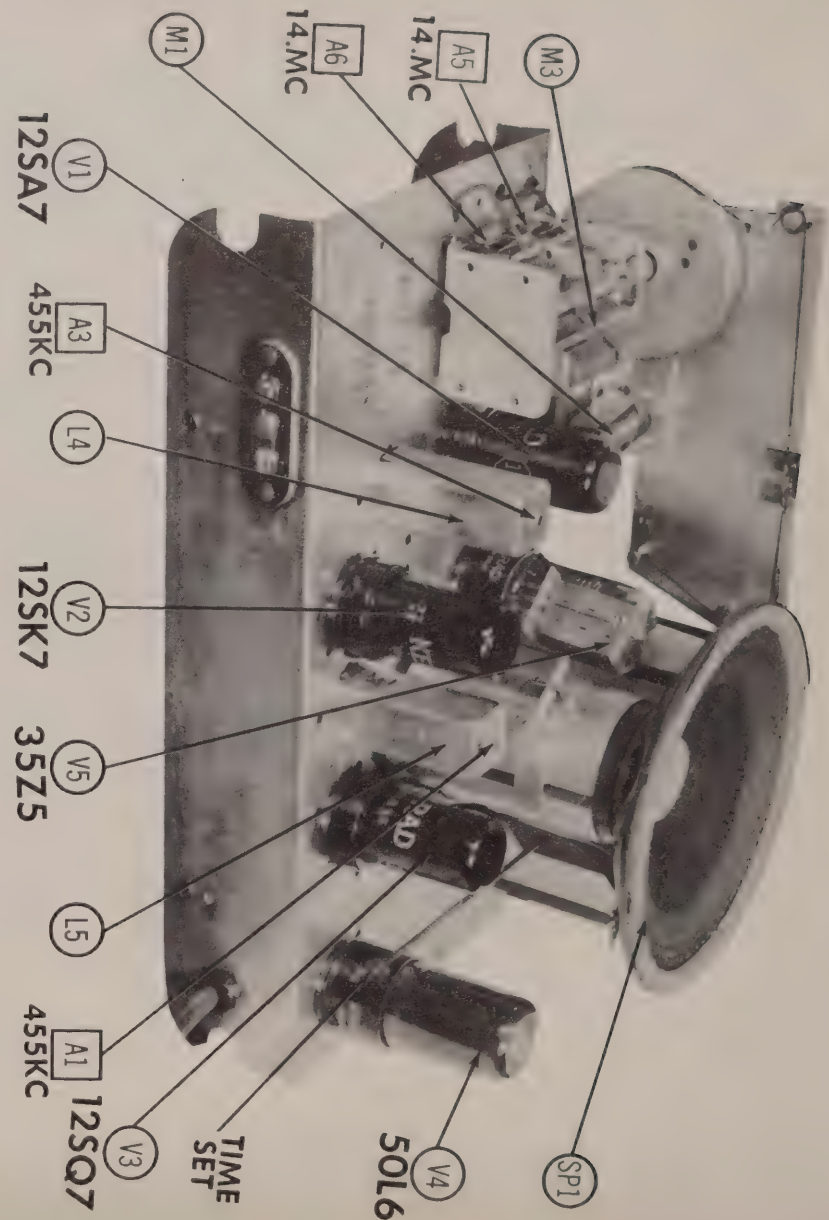
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Hallicrafters PART No.	IRC PART No.	NOTES
R2	47Ω	½	23X20X470K		
R3	1 Meg	½	23X20X105M	BTS-1 Meg	
R4	22KΩ	½	23X20X233M	BTS-22K	
R5	56Ω	½	23X20X560K		
R6	1000Ω	½		BTS-1000	Note 1
R7	56Ω	½	23X20X560K		Note 2
R8	2.2Meg	½	23X20X225M	BTS-2.2Meg	
R9	47KΩ	½	♦49A016	BTS-47K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	IRC PART No.	NOTES
R10	10Meg	½	23X20X106M	BTS-10Meg	
R11	270KΩ	½	23X20X274M	BTS-270K	
R12	470KΩ	½	23X20X474M	BTS-470K	
R13	150Ω	½	23X20X151K	BTS-150	
R14	820Ω	1	23X30X821M	BTA-820	
R15	22Ω	½	23X20X220M		
R16	15Ω	½	23X20X150M		
R17	270KΩ	½	23X20X274M	BTS-270K	

Note 1. Some models use a 1200Ω resistor in this application.
2. Models using a 12BA6 use a 100Ω resistor in this application.
♦ Items R9, C9A, C9B are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	1.9KΩ	2.8Ω	210Ω	.7Ω	55C187	A-3330	A-2928	R0-2	S-2X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Hallicrafters PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	2.8Ω	T12-PB9			

COILS (RF-IF)

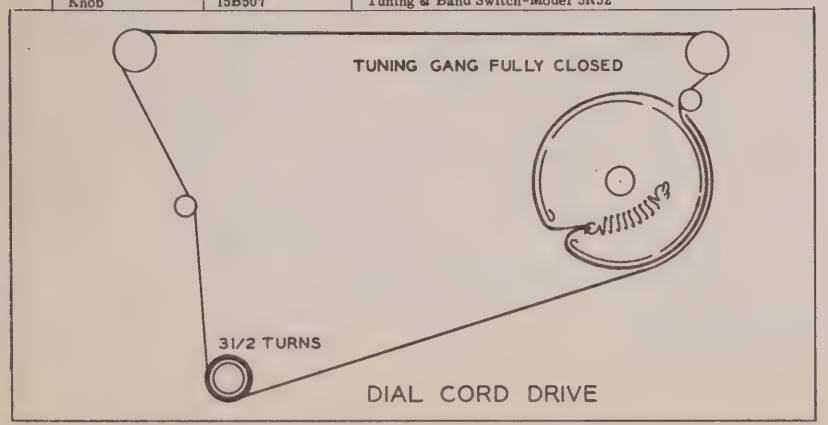
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Hallicrafters PART No.	MERIT PART No.	
L1A	SW Ant. Coil	.4Ω	.4Ω	51B1494		
B	BC Ant. Coil	42Ω	3.8Ω			
L2	SW Osc. Coil	0Ω		51B1493		
L3	BC Osc. Coil	5.5Ω		51B1495		Tap @ 1Ω
L4	Input IF	16.5Ω	16.5Ω	50B524	BC352	
L5	Output IF	17Ω	17Ω	50B525	BC353	

DIAL LIGHTS

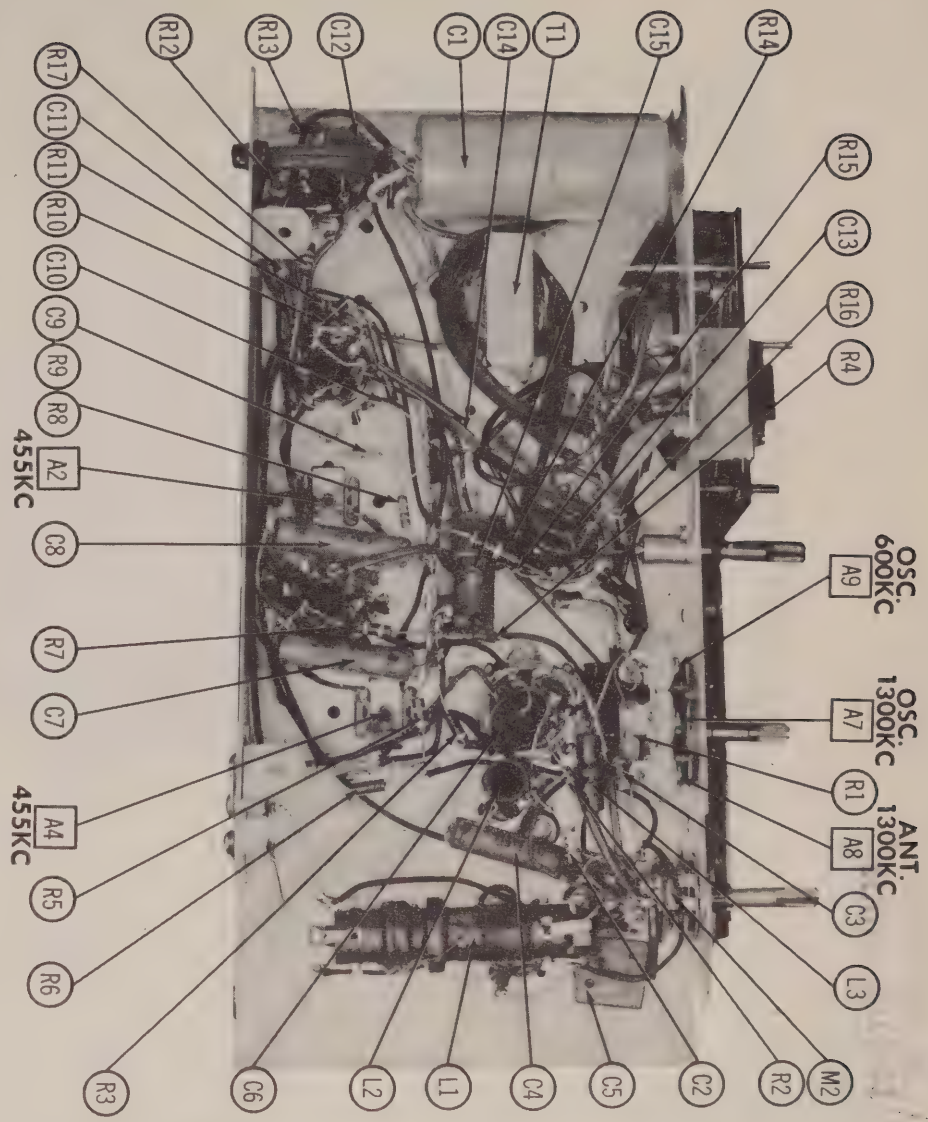
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Hallicrafters PART No.		
M1	Bayonet	6-8	.15	Brown	39A004		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M2	Switch	60B472	Band Change
M3	2 Gang Var. Cap.	48C282	(16-462MMF, 14-455MMF)
	Trimmer Strip	44C408	3 Section
	Cabinet	116E009	Model 5R50
	Cabinet	116 E010	Model 5R51
	Cabinet	116E011	Model 5R52
	Clock	80-117	
	Dial Glass	22C349	
	Dial Pointer	82A211	
	Knob	15B477	Volume
	Knob	15B504	Clock
	Knob	15B505	Tuning & Band Switch-Model 5R50
	Knob	15B506	Tuning & Band Switch-Model 5R51
	Knob	15B507	Tuning & Band Switch-Model 5R52



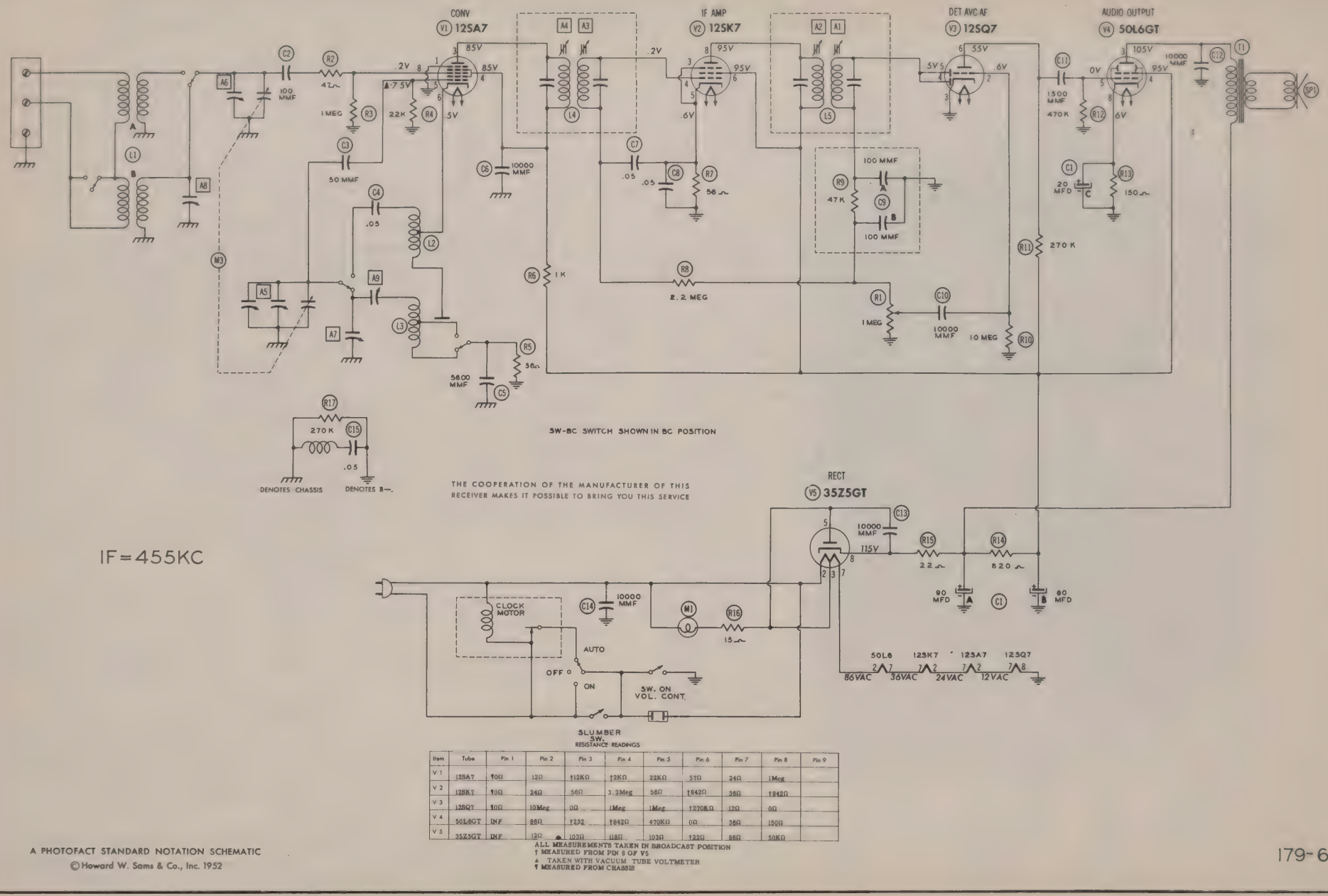
CHASSIS—BOTTOM VIEW



SET 179 FOLDER 6

HALLICRAFTERS MODEL 5R50

HALLICRAFTERS MODEL 5R50



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12SA7	10Ω	12Ω	112KΩ	12KΩ	22KΩ	57Ω	24Ω	1Meg	
V 2	12SK7	10Ω	24Ω	56Ω	3.3Meg	56Ω	1842Ω	36Ω	1842Ω	
V 3	12SQ7	10Ω	10Meg	0Ω	1Meg	1Meg	1270KΩ	12Ω	0Ω	
V 4	50L6GT	INF	86Ω	1232	1842Ω	470KΩ	0Ω	36Ω	150Ω	
V 5	35Z5GT	INF	12Ω	103Ω	118Ω	103Ω	122Ω	86Ω	50KΩ	

ALL MEASUREMENTS TAKEN IN BROADCAST POSITION
† MEASURED FROM PIN 8 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER
¶ MEASURED FROM CHASSIS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

JACKSON MODEL 255

3924 MEA... ST.
DENVER, COLORADO

JACKSON MODEL 255

JACKSON MODEL 255

TRADE NAME	Jackson Model 255
MANUFACTURER	Jackson Ind., Inc., 500 E. 40th St., Chicago, Ill.
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver
TUBES (EIGHT)	Types 12AT7 FM RF Amp.-FM Mixer, 6BE6 FM Osc.-AM Conv., 6BA6 FM AM IF Amp., 6BA6 FM IF Amp., 6AL5 Ratio Det., 6AT6 Det.-AVC-AF Amp., 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .52 Amp. @ 117 Volts AC
TUNING RANGE-	BROADCAST 540-1600 KC — FREQ. MOD. 88-108 MC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT-SEE MILWAUKEE ERWOOD MODEL 11600-PHOTOFACT SET # 73-FOLDER #7 OR RECORD CHANGER MANUAL CM-3 OR SEE VM MODEL 950-PHOTOFACT SET #107 FOLDER #13 OR RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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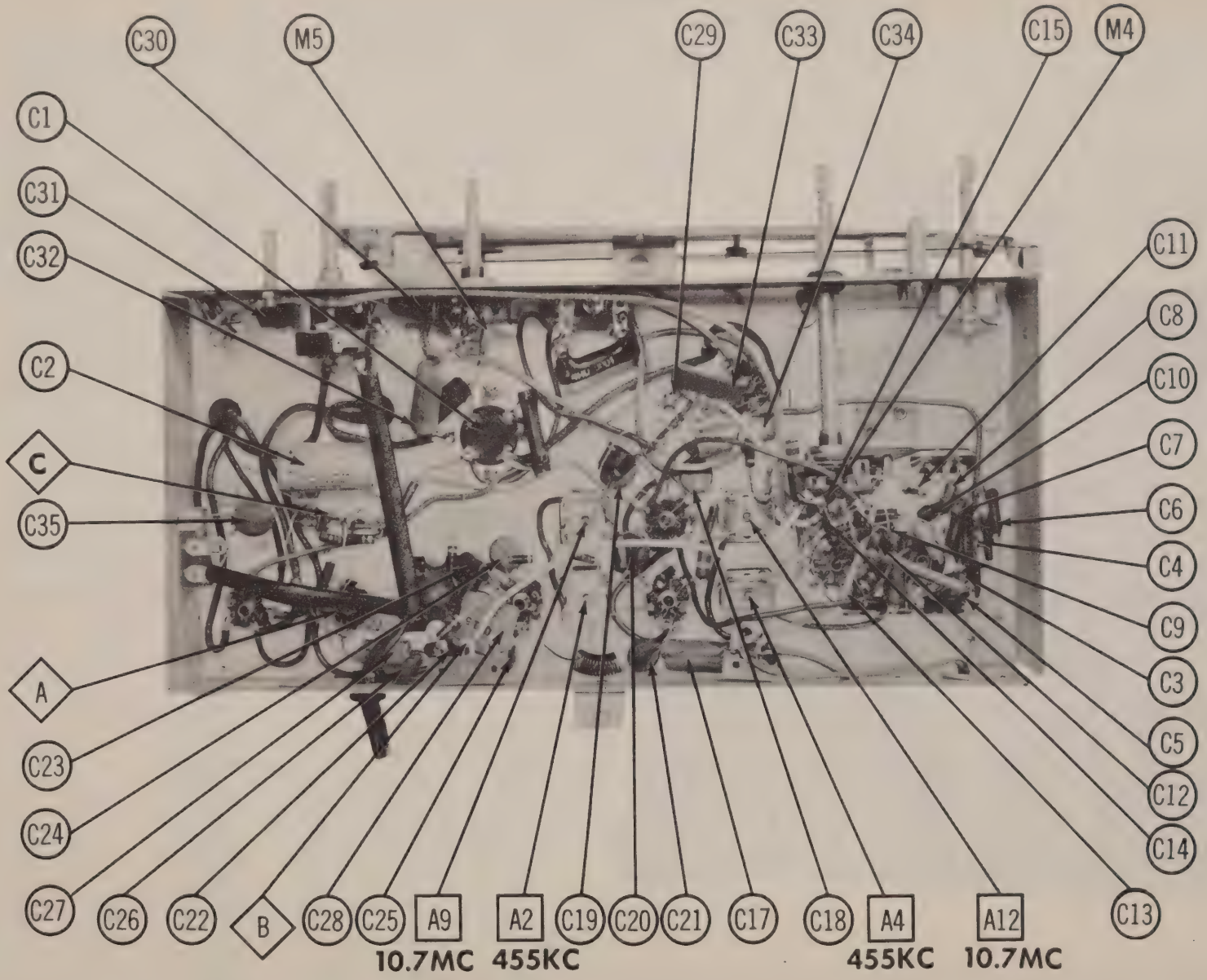
C30
M5
C29
C33
C34
C15
M4
C1
C31
C32
C11
C8
C2
C10
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C7
C35
C6
C4
C9
A
C3
C23
C5
C12
C24
C14
C27
C26
C22
B
C28
C25
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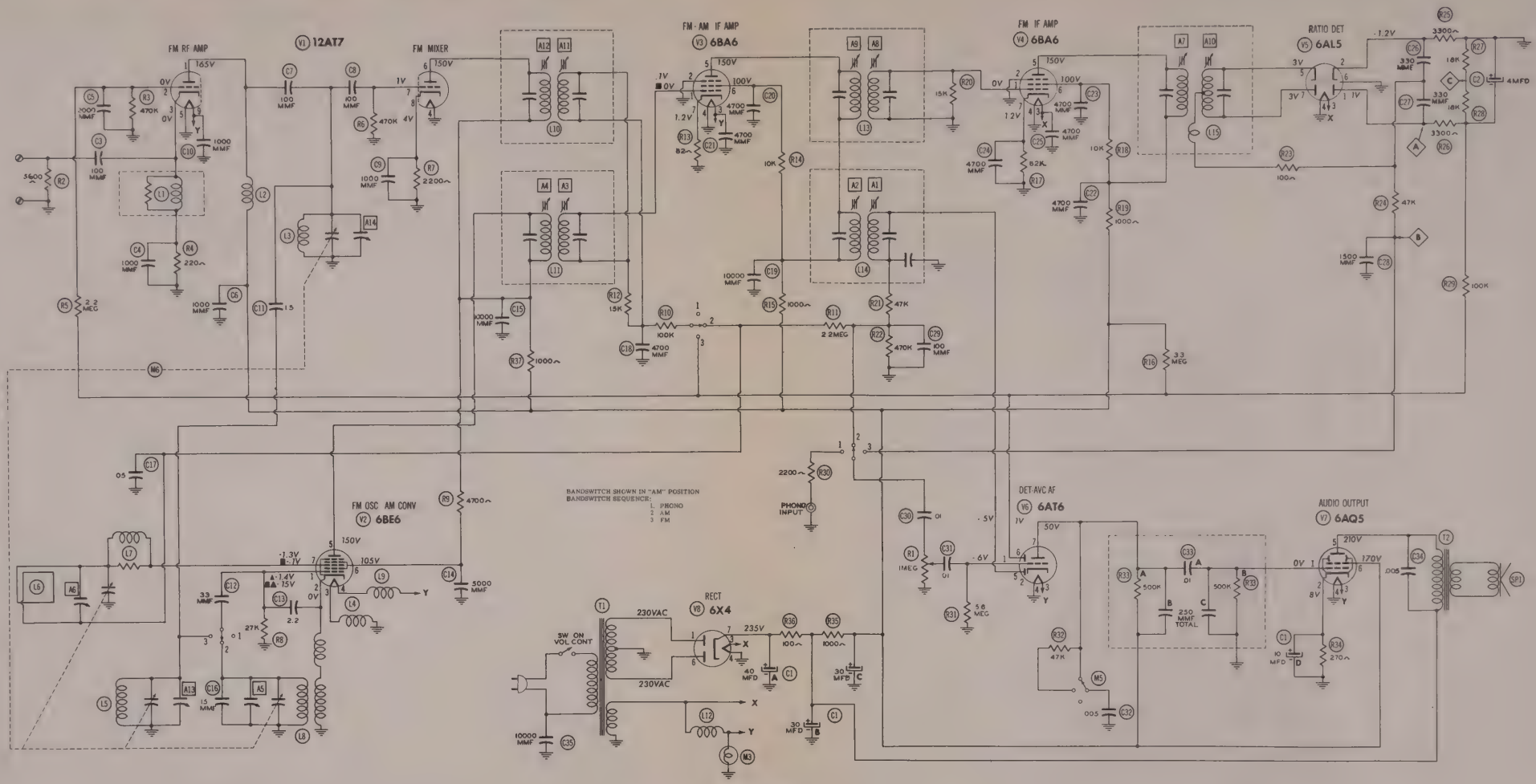
10.7MC
455KC
455KC
10.7MC



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	†1.1KΩ	400KΩ	230Ω	0Ω	0Ω	†2.1KΩ	470KΩ	2.2K Ω	.1Ω
V 2	6BE6	27KΩ	.9Ω	.3Ω	.4Ω	†2.1KΩ	†6.8KΩ	2.4Meg		
V 3	6BA6	235KΩ ▲2.5Meg	0Ω	.1Ω	0Ω	†2.1KΩ	†12KΩ	82Ω		
V 4	6BA6	6Ω	0Ω	.1Ω	0Ω	†2.1KΩ	†12KΩ	82Ω		
V 5	6AL5	3.3KΩ	37KΩ	.1Ω	0Ω	INF	INF	INF		
V 6	6AT6	5.6Meg	0Ω	.1Ω	0Ω	517KΩ	135KΩ	†500KΩ	—	
V 7	6AQ5	500KΩ	270Ω	.1Ω	0Ω	†650Ω	†1.1KΩ	500KΩ		
V 8	6X4	95Ω	INF	1Ω	0Ω	INF	88Ω	45KΩ		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED
▲ MEASURED IN "AM" POSITION
† MEASURED FROM PIN 7 OF V8
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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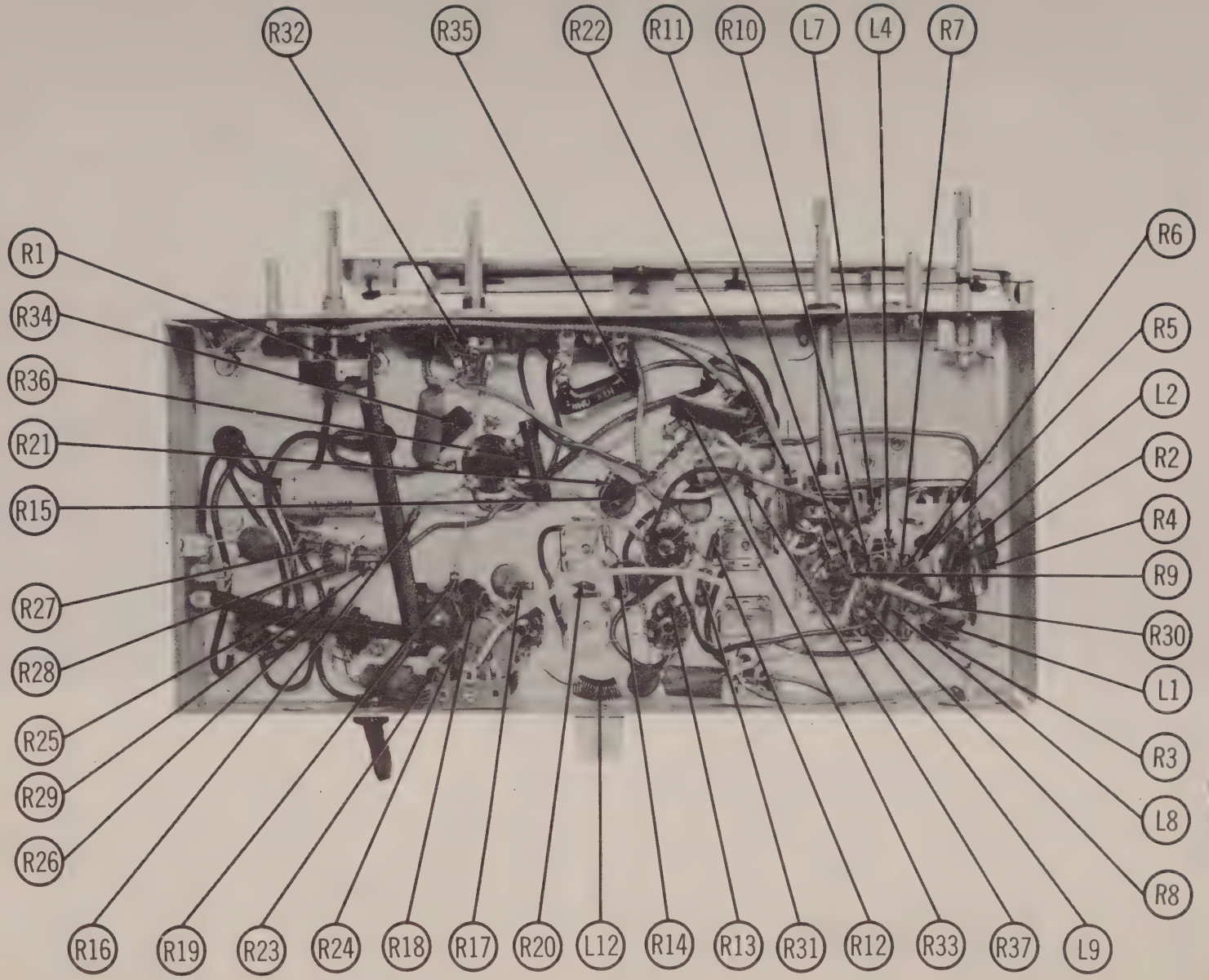
179-7


R32
R35
R22
R11
R10
L7
L4
R7
R1
R34
R36
R21
R15
R27
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R25
R29
R26
R6
R5
L2
R2
R4
R9
R30
L1
R3
L8
R8
R16
R19
R23
R24
R18
R17
R20
L12
R14
R13
R31
R12
R33
R37
L9

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tuning capacitor fully open and set the pointer 2 1/4 inches from the right hand edge of the dial back plate. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1M FD	High side to pin 7 (grid) of 6BE6 (V2) Low side to chassis.	455KC (400∿Mod)	AM	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1600KC	"	"	"	A5	"
3.		Loop	1400KC	"	Tune to 1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6BA6 (V3) Low side to chassis	10.7MC (Unmod)	FM	Point of non-interference.	DC probe to point (A) Common to chassis	A7, A8, A9	Adjust for maximum deflection, alternate generator to give minimum usable indication on VTVM
5.	"	"	"	"	"	DC probe to point (B) Common to point (C)	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	"	"	"	DC probe to point (A) Common to chassis	A11, A12	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6BA6 (V3) Low side to chassis	10.7MC (450KC Swp	FM	Point of nonin-terference.	Vert Amp to point (A) Low side to chassis.	A7, A8, A9	Disconnect stabilizer capacitor C2. Adjust for curve of maximum and symmetry as per fig. 1.
5.	"	High side to pin 7 (grid) of 6BE6 (V2) Low iside to chassis	"	"	"	"	A11, A12	"
6.	"	"	"	"	"	Vert Amp to point (B) Low side to chassis.	A10	Reconnect capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines as per fig. 2 SLIGHTLY retouch. A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω Carbon Resistor	High side thru 270Ω to high side of FM antenna terminal. Low side to chassis	108.5MC (Unmod)	FM	108.5MC	DC probe to point (A) Common to chassis.	A13	Adjust for maximum deflection.
8.	"	"	105MC	"	105MC	"	A14	"

FIG. 1

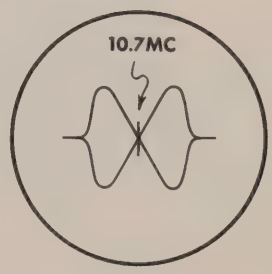


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: JACKSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	FM RF Amplifier-FM Mixer	12AT7	12AT7	9A	
V2	FM Oscillator Am Converter	6BE6	6BE6	7CH	
V3	FM AM IF Amp.	6BA6	6BA6	7BK	
V4	FM IF Amplifier	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	Det.-AVC-AF Amp	6AT6	6AT6	7BT	
V7	Audio Output	6AQ5	6AQ5	7BZ	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

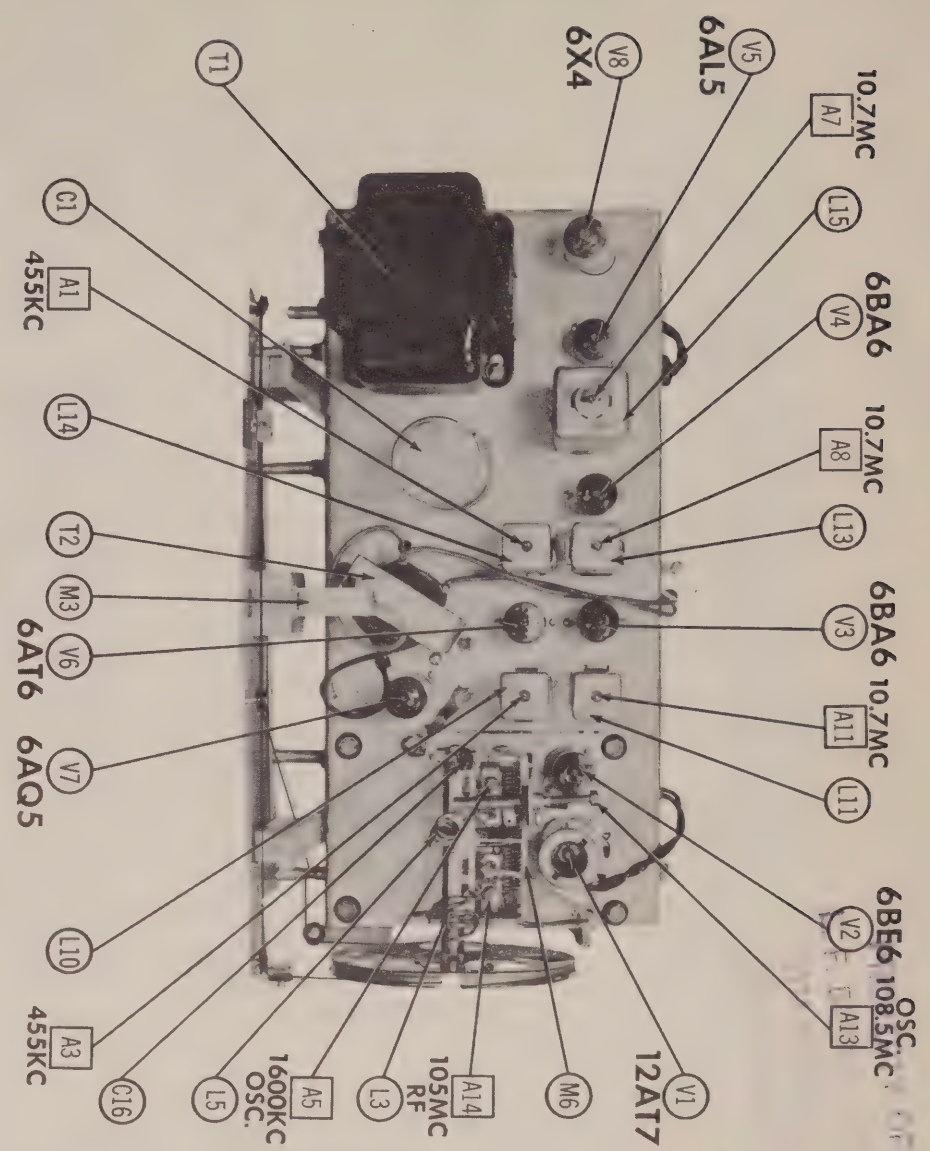
ITEM No.	RATING CAP.	RATING VOLT	JACKSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350		AFH4-112		UPT44445		FP432.4	TVL-3787	
B	■30	300				BR102A			TVA-1204	
C	▲30	300								
D	10	25								
C2	4	50		PRS150/4		BR550		TC30	TVA-1303	
C3	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C4	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C5	2000			SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C6	1000			SI1000	D6-102	TM5S1	GP2L-102	UC-521	5HK-D1	
C7	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C8	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	Note 1
C9	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C10	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	Note 2
C11	1.5			SI1.5NPO	TCZ-1.5		NPOK-1R5	ZT-5515	5TCCB-V15	
C12	33			SI33NPO	TCZ-33		NPOK-330	ZT-5433	5TCC-Q33	
C13	2.2				TCZ-2.2		NPOK-2R2		5TCCB-V22	
C14	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C15	10000			BPD-01	DD-103	RM5S1	821-01	DC-511	5HK-S1	
C16	15			SI15	D6-150		GP1K-150	UC-5415	5GA-Q15	
C17	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C18	4700			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C19	10000			BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C20	4700			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C21	4700			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C22	4700			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C23	4700			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C24	4700			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C25	4700			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C26	330	500		1468-00035	D6-331		GP2K-331	UC-5333	1FM-335	
C27	330	500		1468-00035	D6-331		GP2K-331	UC-5333	1FM-335	
C28	1500	500		1467-0015	D6-152	1W5D15	GP2L-152	MC256	1FM-215	
C29	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	Note 3
C30	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C31	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C32	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT6S5	6TM-S5	
C33A	.01									
B	250				♦PC-80		1404-01		♦102C1	
C										
C34	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C35	10000			BPD-01	DD-103	TM5S1	821-01	DC-521	5HK-S1	Note 4

Note 1 Some models use 1000MMF in this application.
Note 2 Some models use 5000MMF in this application.
Note 3 Some models use 180MMF in this application.
Note 4. Somemodels use .05MFD in this application.
♦ Items C33A, C33B, B33C, R33A, R33B are combined in one unit When replacing items seperately, C33B and C33C should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	JACKSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	10A408	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA JACKSON PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	5600Ω	½		BTS-5600	
R3	470KΩ	½		BTS-470K	
R4	220Ω	½		BTS-220	
R5	2.2Meg	½		BTS-2.2Meg	
R6	470KΩ	½		BTS-470K	
R7	2200Ω	½		BTS-2200	
R8	27KΩ	½		BTS-27K	Note 1
R9	4700Ω	½		BTS-4700	
R10	100KΩ	½		BTS-100K	
R11	2.2Meg	½		BTS-2.2Meg	
R12	15KΩ	½		BTS-15K	
R13	82Ω	½		BTS-82	
R14	10KΩ	½		BTS-10K	
R15	1000Ω	½		BTS-1000	
R16	3.3Meg	½		BTS-3.3Meg	
R17	82Ω	½		BTS-82	
R18	10KΩ	½		BTS-10K	
R19	1000Ω	½		BTS-1000	
R20	15KΩ	½		BTS-15K	
R21	47KΩ	½		BTS-47K	
R22	470KΩ	1		BTA-470K	
R23	100Ω	½		BTS-100	
R24	47KΩ	½		BTS-47K	
R25	3300Ω	½		BTS-3300	
R26	1000Ω	½		BTS-1000	Note 2
R27	18KΩ	½		BTS-18K	
R28	18KΩ	½		BTS-18K	
R29	100KΩ	½		BTS-100K	
R30	2200Ω	½		BTS-2200	Note 3
R31	5.6Meg	½		BTS-5.6Meg	
R32	47KΩ	½		BTS-47K	
R33A	500KΩ	½	} •		
B	500KΩ	½			
R34	270Ω	1		BTA-270	
R35	1000Ω	5		1 3/4A-1000	
R36	100Ω	2		BW-2-100	
R37	1000Ω	½		BTS-1000	Note 4

Note 1 Some models use a 22KΩ resistor in this application.
Note 2 Some models use a 1200Ω resistor in this application.
Note 3 Some models use a 220KΩ resistor in this application..
Note 4 Note used in all models
• Items R33A, R33B, C33A, C33B, C33C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA JACKSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC ⓟ .52A	455VCT .087VAC	6.3VAC 3A		A-1655-13		A-3148 ①		

① Add series dropping resistor.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA JACKSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	5.2KΩ	3.4Ω	550Ω	.5Ω	A-1654-13	A-3823	A-3019	RO-303	S-5X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA JACKSON PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	10'	PM	3.4Ω	B-4601-15		10A31 ①	① Fabricate mtg. clamps.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA JACKSON PART No.	REPLACEMENT DATA MERIT PART No.	NOTES
L1	Cath. Choke	.1Ω				Wound on 1500Ω resistor
L2	FM RF Choke	.4Ω				
L3	FM RF Coil	0Ω				
L4	Fil. Choke	.2Ω				
L5	FM Osc. Coil	0Ω				
L6	AM Loop Ant.	1.1Ω				
L7	AM RF Choke	0Ω				Wound on 47Ω resistor
L8	AM Osc. Coil	.9Ω	5Ω			
L9	Fil. Choke	.2Ω				
L10	1st FM IF	.6Ω			FM-254	
L11	1st AM IF	12.5Ω	12.5Ω		BC352	
L12	Fil Choke	0Ω				
L13	2nd FM IF	.6Ω	.6Ω		FM-254	
L14	2nd AM IF	12.5Ω	13.5Ω		BC353	
L15	Ratio Det.	1Ω	.1Ω		FM252	Tertiary-.15Ω

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA JACKSON PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		ACD-1J	A-1 A-3	W22AB-T	A65MG A62A	96-T	0-1 or S-1 and 0-3 or S-3	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

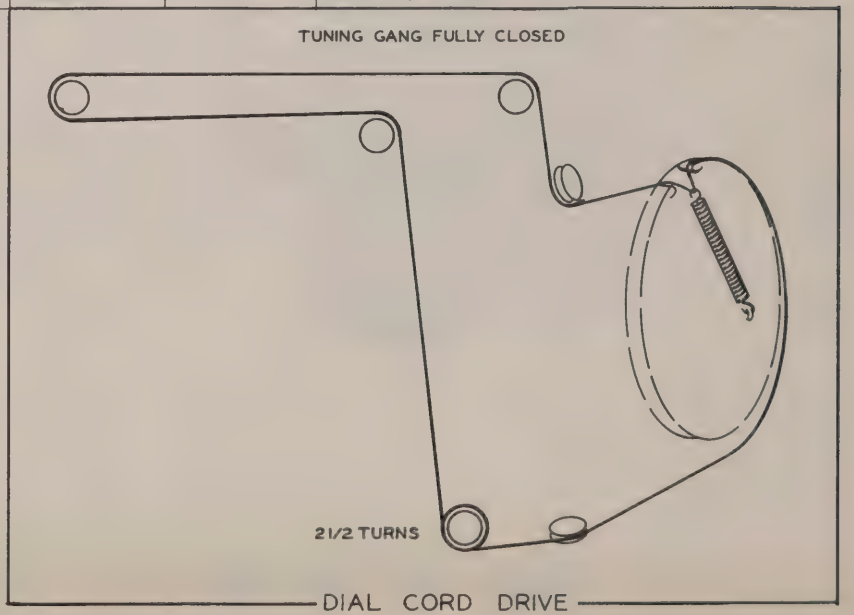
ITEM No.	REPLACEMENT DATA JACKSON PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M2		W-5MGA or W-5MG-S and W-5A or W-5S	A-85LP or A-75LP and A-85 or A-75	

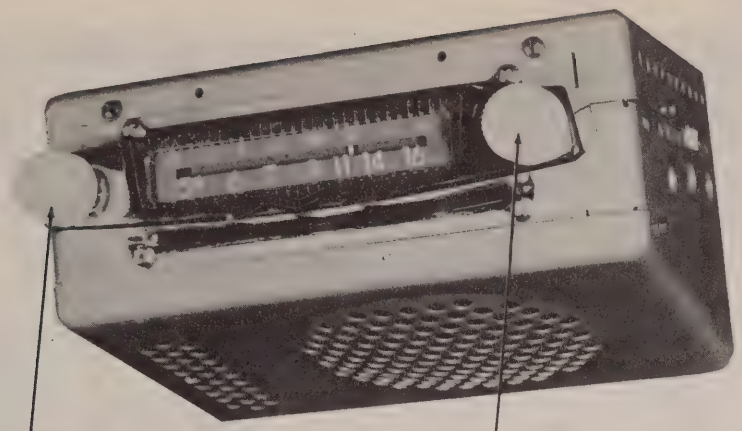
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA JACKSON PART No.		NOTES
M3	Bayonet	6-8	.15	Brown			Type No #47

MISCELLANEOUS

ITEM No.	PART NAME	JACKSON PART No.	NOTES
M4	Switch		Function (Phono-AM-FM)
M5	Switch		Tone
M6	Tuning Cap		(16-512MMF, 24-209MMF)
A6	Trimmer		AM Loop
A13	Trimmer		FM Osc. (1-10MMF)





TRADE NAME	Motorola Model 401A
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Battery Operated Universal Type Automobile Superheterodyne Receiver
TUBES (Six)	Types 6BD6 RF Amp., 6BE6 Conv., 6BD6 IF Amp., 6AT6 Det.-AVC-AF Amp., 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery RATING 5.2 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	535-1605 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455 KC (400% Mod.)	High Frequency end of dial.	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle	1605 KC	"	"	A5	"
3.	"	"	1400 KC	Tune to 1400 KC signal	"	A6, A7	"
	The following steps should be performed only if the tuner is definitely known to be out of alignment due to parts replacement or from being tampered with.						
4.	Fig. 1	Thru dummy to antenna receptacle	1610 KC	High frequency end of dial. Cores should project 1-1/32" from end of coil form.	Across voice coil	A5, A6, A7	Adjust in order given for maximum output.
5.	"	"	1400 KC	Set tuner as per fig. 2.	"	A8, A9, A10	"
	After performing step 5, without changing tuner setting, adjust pointer to 1400 on dial.						

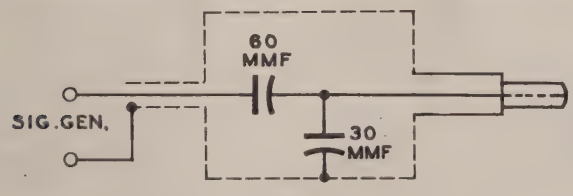


FIG.1

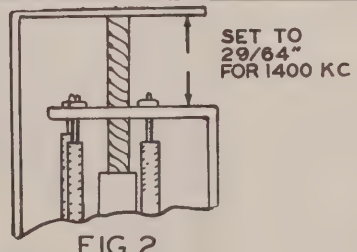


FIG.2

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BD6	6BD6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BD6	6BD6	7BK	
V4	Det.-AVC-AF Amp	6AT6	6AT6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■15	350	23A485677	AFH3-104		UP15S135C		FP328		
B	▲10	350								
C	20	25								
C2	90		21A591682							
C3	.006	100	8A4529	P488-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C4	5		21K70720	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C5	47	500	21R115593	1469-00005		5R5Q5		MCB225	MS-45	
C6	.05	400	8K14791	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C7	.05	100	8K13514	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	.01	100	8K472754	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C9	.01	400	8K23690	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C10	470		21K481377	SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C11	.004	400	8K71909	P688-004	D6-402	PTE6D4	GP2-333-402	PT624	6TM-D4	
C12	.03	1000	8K400883	P1688-03		PTE16S3		PT1613	MB-S3	
C13	.5	100	8K17028	P188-5		MP2P5			68P20	
C14	.5	100	8K17028	P188-5		MP2P5			68P20	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	18K501294	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

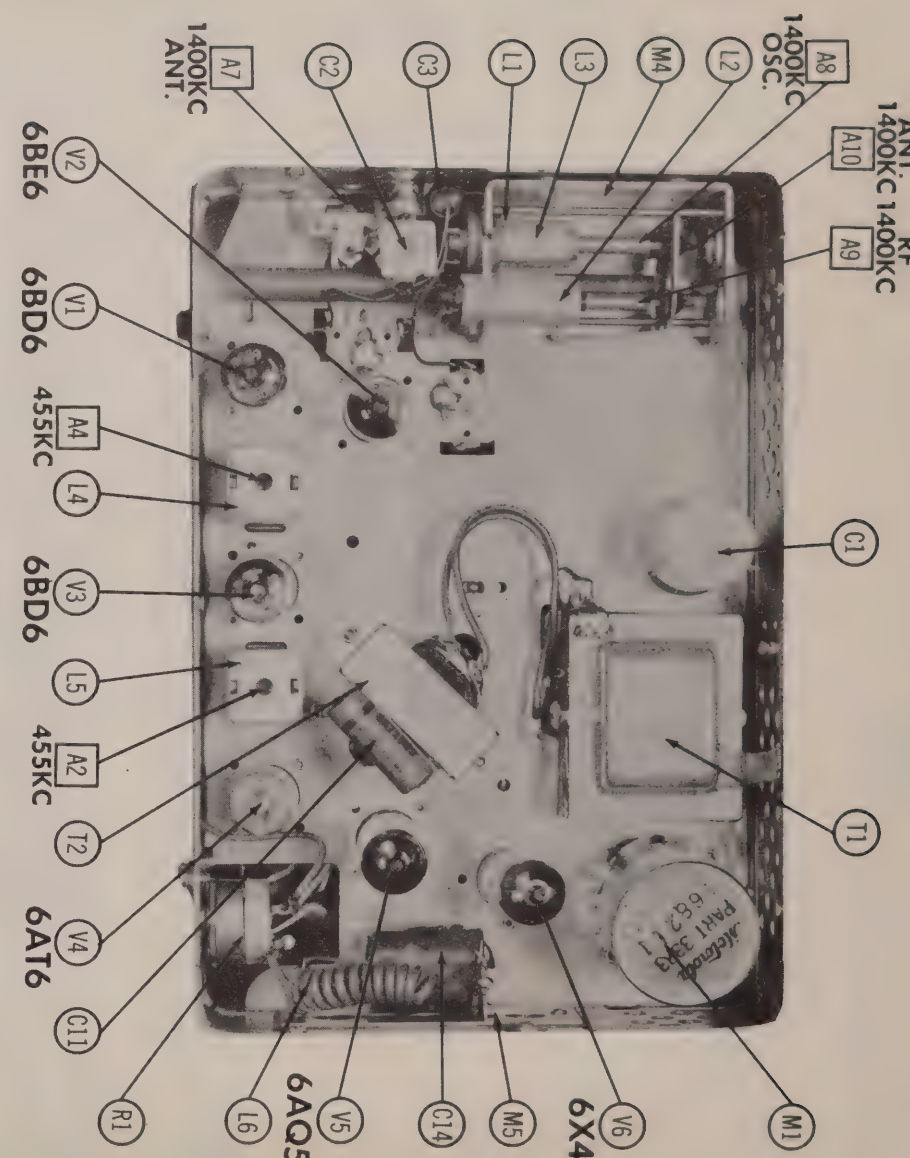
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	1Meg	½	6R6004	BTS-1Meg	
R3	220Ω	½	6R6270	BTS-220	
R4	100KΩ	½	6R6075	BTS-100K	
R5	47KΩ	½		BTS-47K	Note
R6	330Ω	½	6R6022	BTS-330	
R7	6800Ω	2	6R5690	BTB-6800	
R8	1Meg	½	6R6004	BTS-1Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	
R9	4.7Meg	½	6R2122	BTS-4.7Meg	
R10	470KΩ	½	6R6032	BTS-470K	
R11	270KΩ	½	6R6414	BTS-270K	
R12	270Ω	½	6R6336	BTS-270	
R13	2200Ω	2	6R5687	BTB-2200	
R14	56Ω	½	6R5614		
R15	56Ω	½	6R5614		

Note: Some models use a 22KΩ resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VAC @ 2.8A	420VCT .042ADC			25C501303		P-3068		V-16K ①

① Drill new mtg. holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	5.3KΩ	28Ω	405Ω	.62Ω	25B70171	A-3878	A-2930	RO-9 ①	S-3X	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5 1/4"	PM	2.8Ω	50K500415 50B510427 ① 50K513378 ① 50B510485 ② 50B510878 ②	ST-803 P-525	525J4	① Alternate 5" PM Speakers ② Alternate 5" EM Speakers

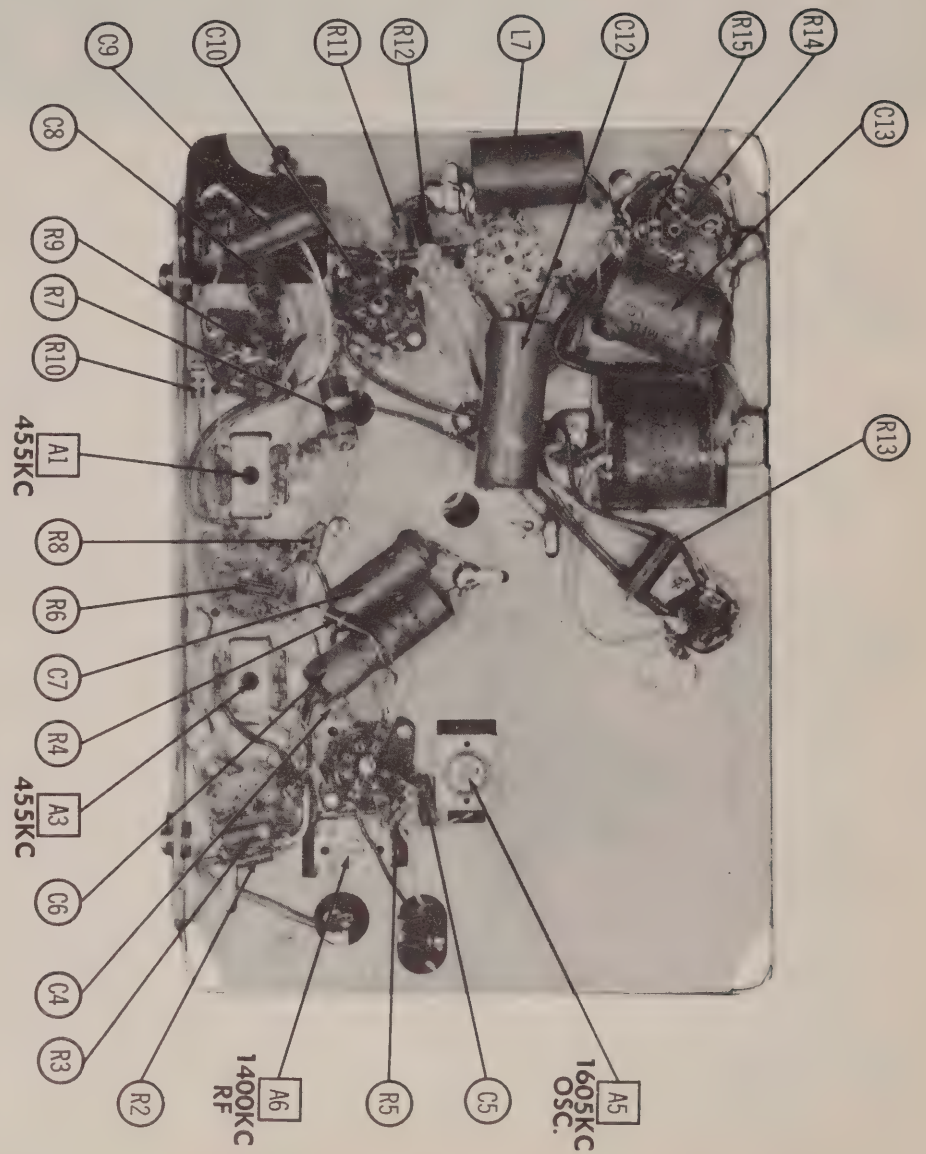
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	
L1	Ant. Coil	12.5Ω		24B502472		
L2	RF Coil	12.5Ω		24B502473		
L3	Osc. Coil	.4Ω	3.3Ω	24B502474		
L4	Input IF	18Ω	18Ω	24B485553	BC352	
L5	Output IF	18Ω	18Ω	24K485554	BC353	
L6	Hash Choke	0Ω		24K580706		
L7	Fil. Choke	0Ω		24A472535		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115Ω	48B3333	5342	859	5342	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

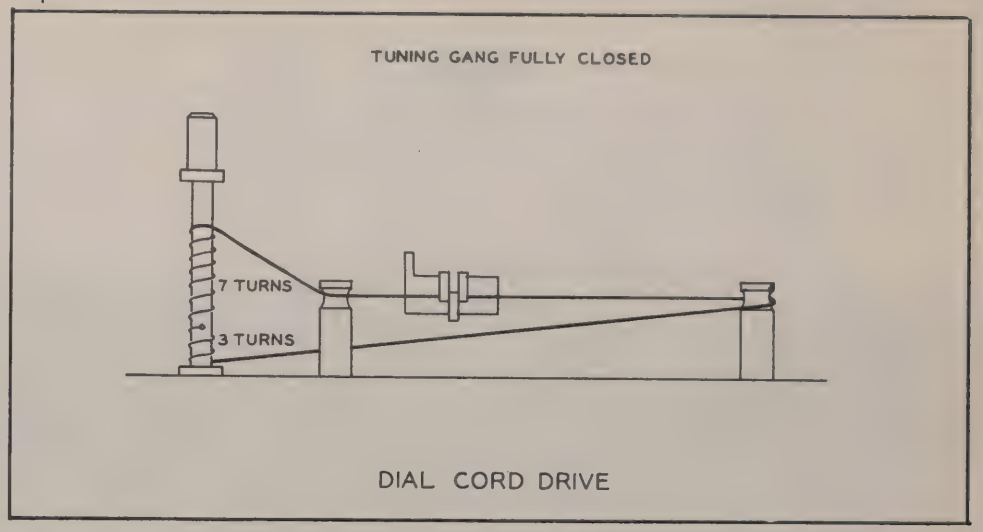
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	65K12894	9K511987 or 9K511982	307014	155014	SFE14	HR1

DIAL LIGHTS

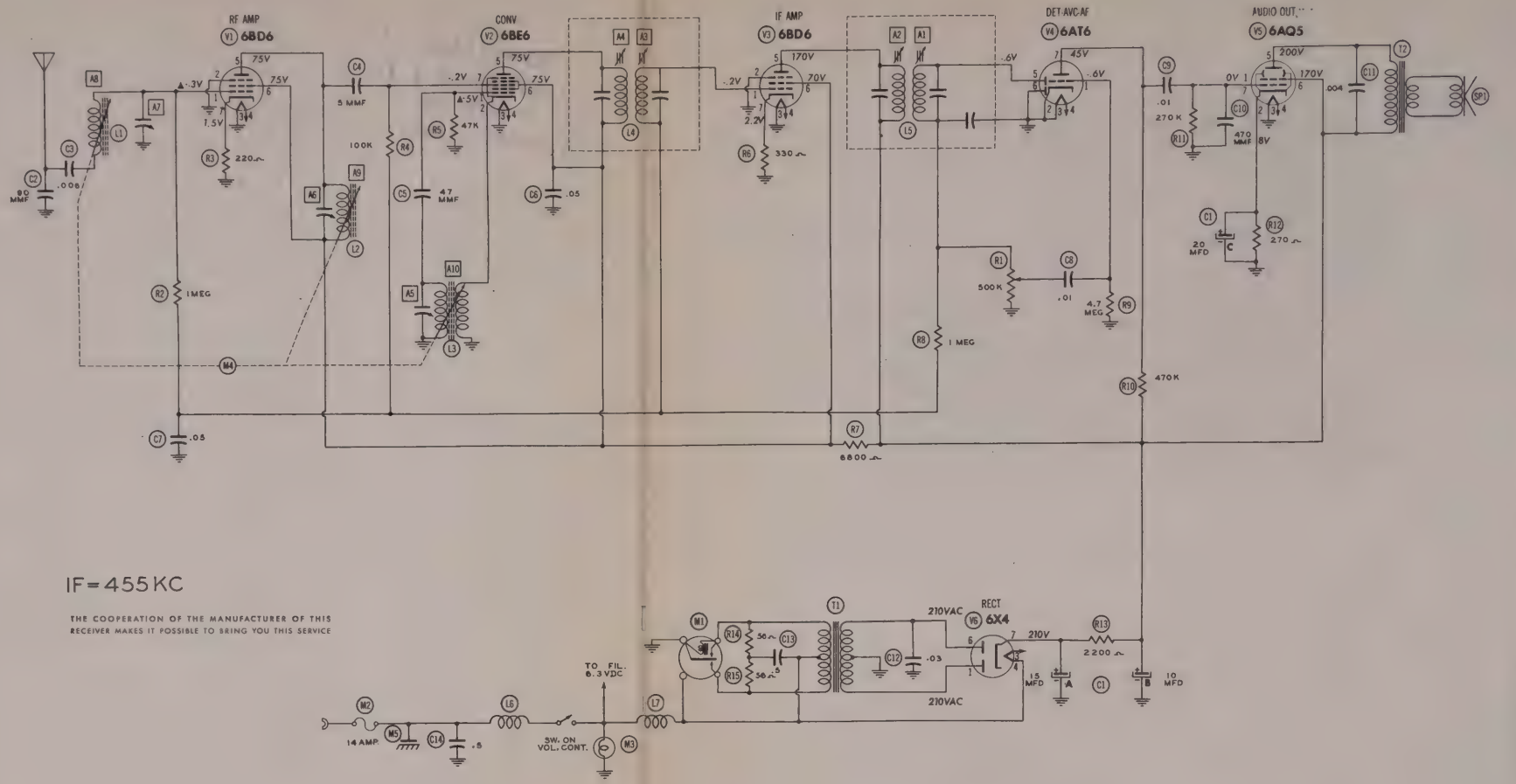
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MOTOROLA PART No.		
M3	Bayonet	6-8	.25	Blue	65X10867		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Tuner Unit	51D502490	
M5	Spark Plate	64A501797	
A5	Trimmer	20A485708	Osc. Adj. (395-470MMF)
A6	Trimmer	20A481526	RF Adj. (20-80MMF)
A7	Trimmer	20A502338	Ant. Adj. (50- 180MMF)
	Pointer	1A501293	Includes Slider Assembly
	Dial Scale	34K502385	
	Knob	36B501297	2 Used



DIAL CORD DRIVE



IF = 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BD6	2.5Meg	0Ω	0Ω	.4Ω	†9KΩ	†9KΩ	220Ω
V 2	6BE6	47KΩ	.4Ω	0Ω	.4Ω	†9KΩ	†9KΩ	1.6Meg
V 3	6BD6	1.5Meg	0Ω	0Ω	.4Ω	†2.2KΩ	†9KΩ	330Ω
V 4	6AT6	4.7Meg	0Ω	0Ω	.4Ω	500KΩ	0Ω	†470KΩ
V 5	6AQ5	270KΩ	270Ω	0Ω	.4Ω	†405Ω	†2.2KΩ	270KΩ
V 6	6X4	400Ω	.4Ω	.4Ω	0Ω	INF	400Ω	80KΩ

† MEASURED FROM PIN 7 OF V6

▲ TAKEN WITH VACUUM TUBE VOLTMETER

1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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MODEL 52-T2252

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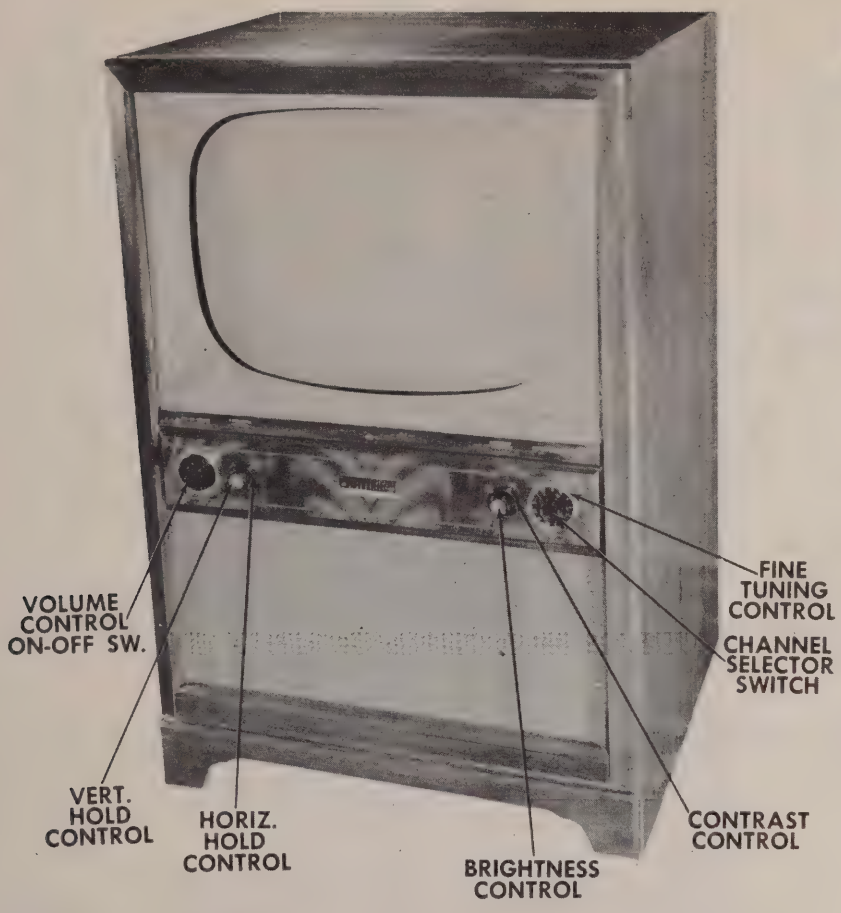

PHILCO 52-T2252

TRADE NAME	Philco Models 52-T1802, T1821, T1822, T1845, T2120, T2150-W, T2151, T2151-L, T2252, 53-T1824, T1825, T1826, T1852, T2152, (R-F Chassis 71, Def. Chassis G1) Code 124
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.5 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T1845, 52-T2120, 52-T2150-W, 52-T2151, -L, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-T1852, 53-T2152 (Code 124)

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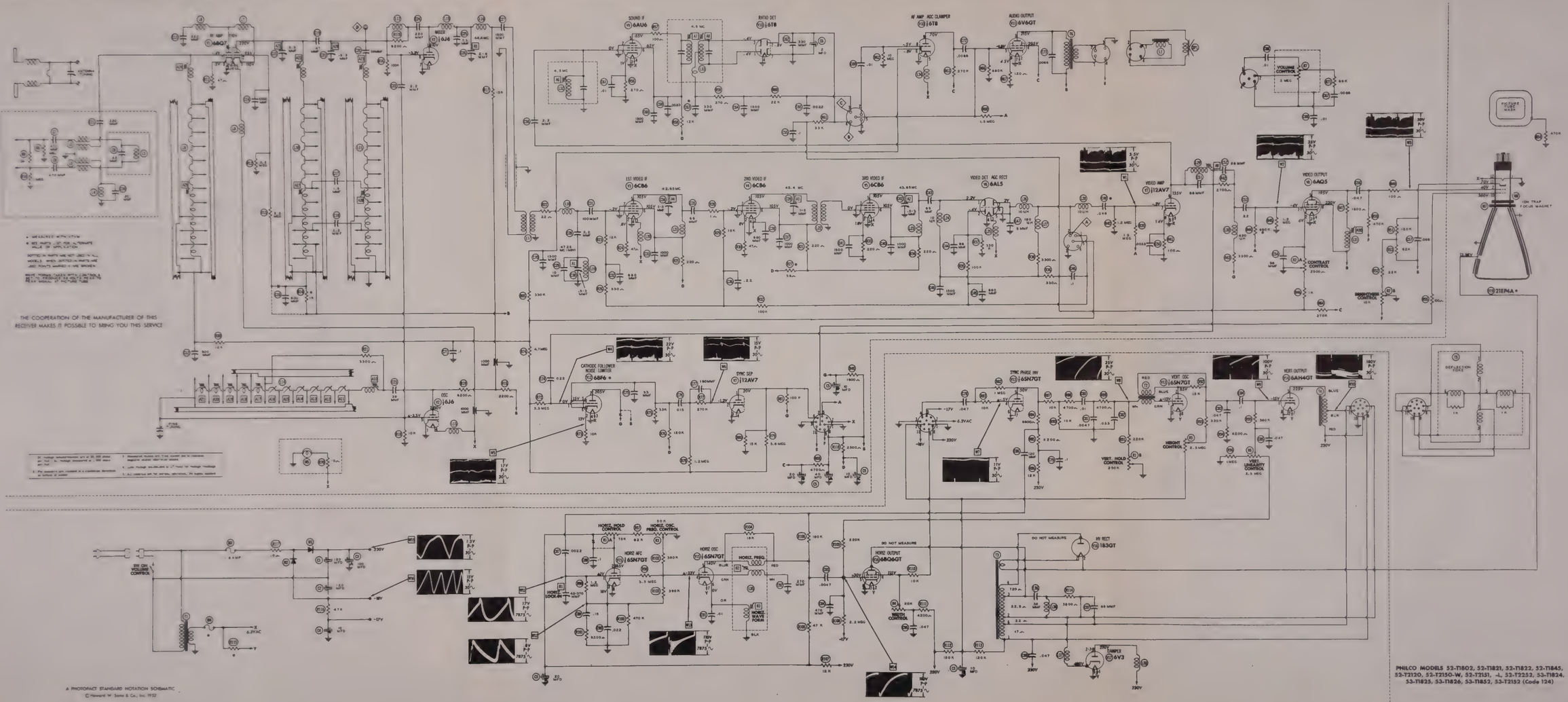
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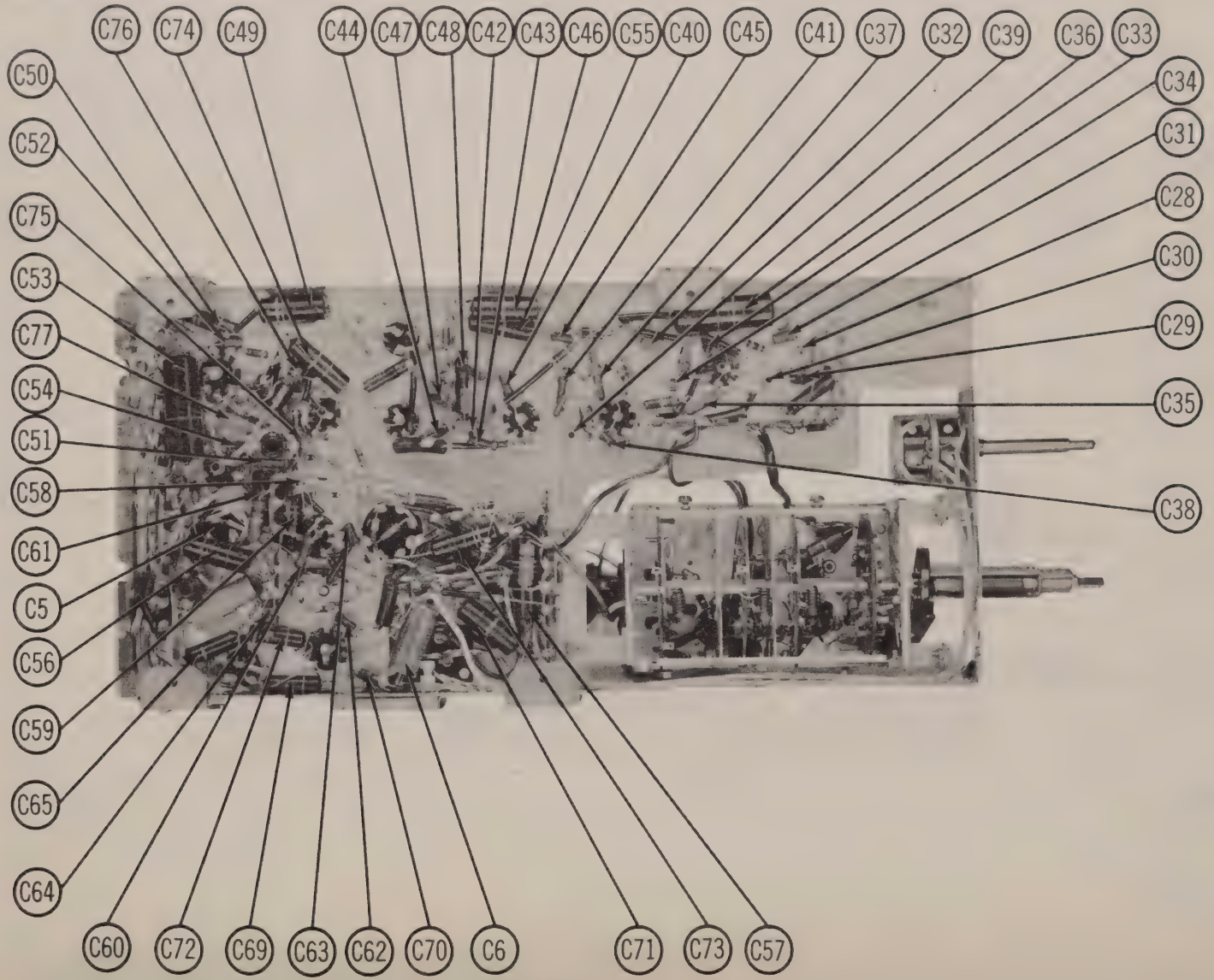
PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T1845, 52-T2120, 52-T2150-W, 52-T2151, -1, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-T1852, 53-T2152 (Code 124)

PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T1845, 52-T2120, 52-T2150-W, 52-T2151, -1, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-T1852, 53-T2152 (Code 124)

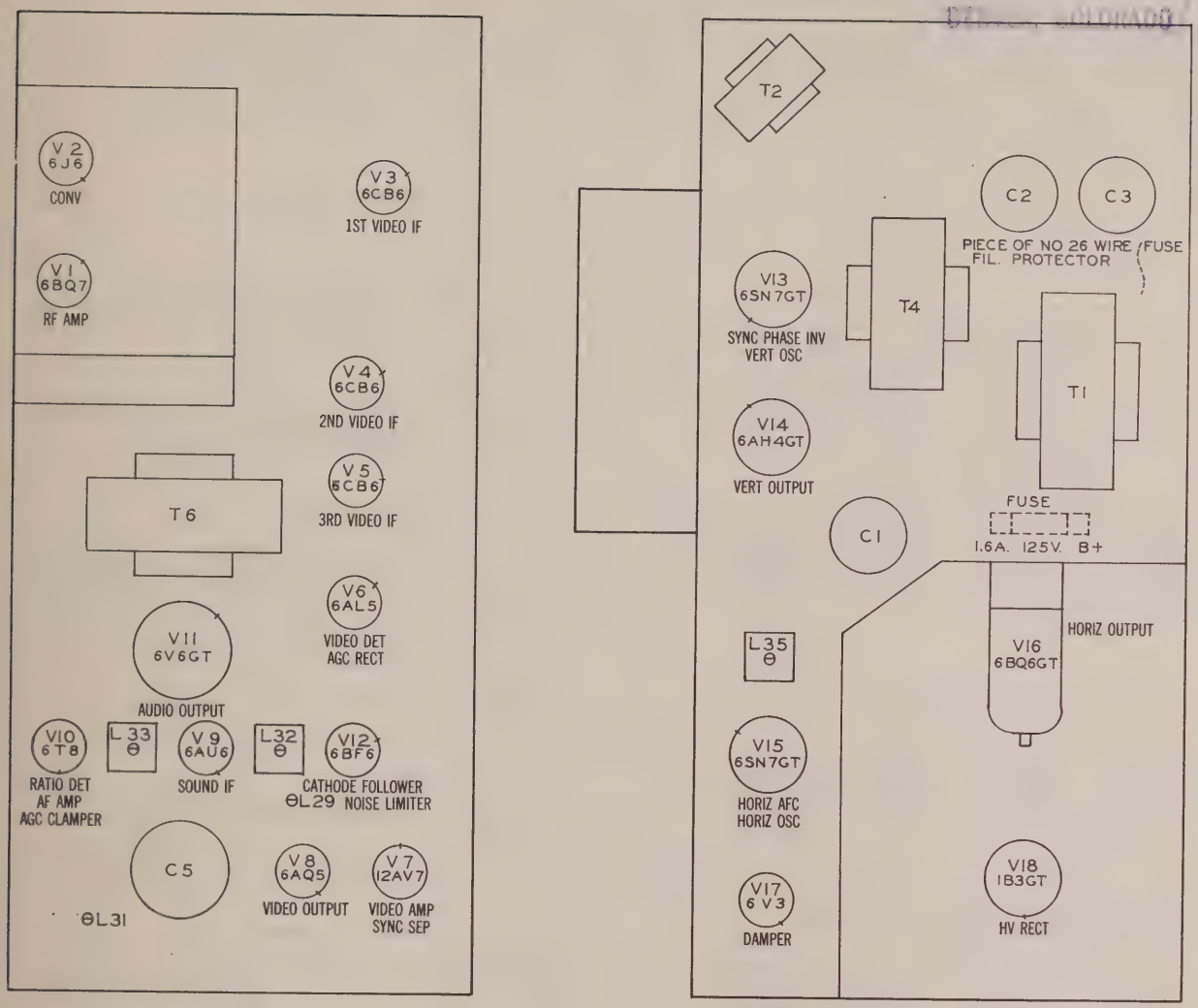
PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T1845, 52-T2120, 52-T2150-W, 52-T2151, -L, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-T1852, 53-T2152 (Code 124)

R-F-I-F CHASSIS—TOP VIEW



RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No Raster, No Sound-Selenium Rectifiers (M1, M2) Fuse (M3, M4)

LOSS OF PICTURE OR SOUND
No pic, No sound, Has raster-V2, V3, V4, V5, V6, V7
No pic, No sound, Has snow-V1, V2, V3
No pic, Has sound, Has raster-V8, V19
Has pic, No sound-V9, V10, V11
Overloaded picture-V6

SYNC FAILURE
No vert. sync.-V13
No horiz. sync.-V13, V15
No vert. or hor. sync.-V12, V7, V13

SWEEP FAILURE
No raster, has sound-V15, V16, V17, V18, V19
No vertical deflection-V14
Poor vert. linearity or foldover-V13, V14
Poor horiz. linearity of foldover-V15, V16, V17
Narrow picture-V15, V16, V17, V18, M1, M2
Vert. off freq.-V13
Horiz. off freq.-V13, V15

PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T1845, 52-T2120, 52-T2150-W, 52-T2151, -L, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-T1852, 53-T2152 (Code 124)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage. Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Remove the converter tube V2 from its socket and replace with a 6J6 which as pin 2 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 Volt battery to the ungrounded side of C45 (Pin 1 of Video -AGC test jack). Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	47.25MC (Unmod.)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	43.65MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	45.4MC	"	"	A3	"
4.	"	"	42.85MC	"	"	A4	"
5.	"	"	44.4MC	"	"	A5	Adjust for maximum deflection. Recheck step 1.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Leave bias battery connected as under Video IF Alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	43MC (10MC Swp)	42.75MC 43.65MC 45.75MC	Any	Vert. amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve within limits as shown in fig. 1. If necessary adjust A2 thru A5 for desired response.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	2200Ω Carbon Resistor	High side thru 2200Ω to point (A). Low side to chassis.	Not used	4.5MC (Unmod.)	Any	Use VTVM. DC probe to point (B). Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
8.	"	"	Not used	4.5MC (400∿ AM Mod.)	"	Vert. amp. of scope to point C. Low side to chassis.	A8	Adjust for MINIMUM 400∿ indication on scope.

Restore set to operating condition and tune in a local TV station. Turn the fine tuning control for a slightly fuzzy picture. Adjust A8 for MINIMUM buzz.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	2200Ω Carbon Resistor	High side thru 2200Ω to point (A). Low side to chassis.	Not used	4.5MC (400∿ AM Mod.)	Any	Vert. amp. thru detector (fig. 2) to pin 2 of picture tube. Low side to chassis.	A9	Adjust for MINIMUM 400∿ indication on scope.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the bias battery as under Video IF Alignment.
Set the fine tuning control at the mid-position of its range. At this position the tooth on the cam will be centered on the Channel 8 tuning core.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC	13	Vert. amp. to point (A). Low side to chassis.	A10	Adjust to place video marker at 50% on high frequency side of response curve as per fig. 3.
			207MC (10MC Swp)	205.25MC	12		A11	
			201MC (10MC Swp)	199.25MC	11		A12	
			195MC (10MC Swp)	193.25MC	10		A13	
			189MC (10MC Swp)	187.25MC	9		A14	
			183MC (10MC Swp)	181.25MC	8		A15	
			177MC (10MC Swp)	175.25MC	7		A16	
			85MC (10MC Swp)	83.25MC	6		A17	
			79MC (10MC Swp)	77.25MC	5		A18	
			69MC (10MC Swp)	67.25MC	4		A19	
			63MC (10MC Swp)	61.25MC	3		A20	
			57MC (10MC Swp)	55.25MC	2		A21	

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

Replace the 3 volt bias battery with a 1.5 volt battery.
Disconnect the tuner coupling link from the terminal mounting strip near the V3 socket and solder a 68 ohm, ½ watt carbon resistor across the open link coming from the tuner.
Remove V3 from its socket.
During alignment maintain generator output below point of tuner overload as evidenced by a change in wave shape with change of generator output.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 213.MC 215.75MC	13	Vert. amp. thru 10KΩ to point ◇D. Low side to chassis.	A22, A23 A24	Adjust A22 and A23 for symmetrical response curve within limits as shown in fig. 4. Adjust A23 counter clockwise until single peak appears. Adjust A22 to center the peak at 213MC. Adjust A24 for maximum amplitude and symmetry of the single peak.
12.	"	"	"	"	"	"		Readjust A22 and A23 for curve within the limits of fig. 4.
13.	"	"	177MC (10MC Swp)	175.25MC 177MC 179.75MC	7	"	A25, A26	Observe response for "desired" curve centered and symmetrical about 177MC. as per fig. 5A. If curve appears unsymmetrical as "actual" response in 5A adjust A25 and A26 until the curve appears as in fig. 5B. Repeat steps 12 and 13 for nearest approach to desired response curve.
14.	"	"	85MC (10MC Swp)	83.25MC 85MC 87.75MC	6	"	A27, A28 A29	Adjust A27 and A28 for response similar to fig. 4, then adjust A28 counter clockwise until a single peak appears. Adjust A27 to center the peak at 85MC. Adjust A29 for maximum amplitude and symmetry as of the single peak. Readjust A27 and A28 for curve within the limits of fig. 4.

VIDEO-OUTPUT PEAKING COIL ADJUSTMENT

In case of excessive overshoot or smear on some stations it may be necessary to adjust A30. Alignment of the tuner and IF portions of the receiver must be correct before adjustment of A30 is made. Proper adjustment point is the one of least smear or trailing whites.
After adjusting A30 check other channels to see that they have not been seriously affected.

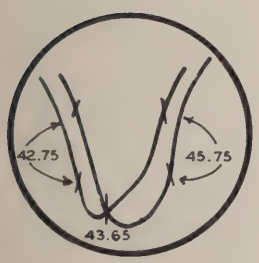


FIG.1

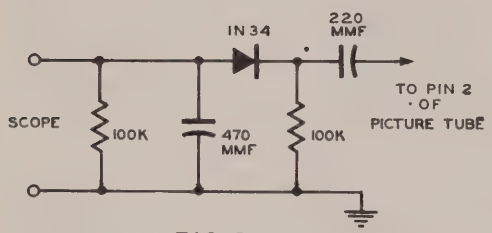


FIG.2

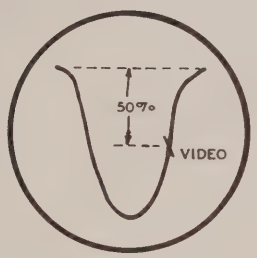


FIG.3

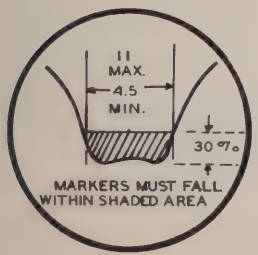


FIG.4

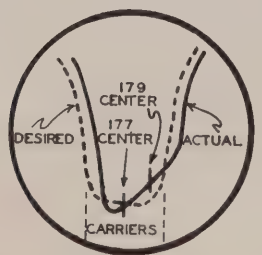


FIG.5A

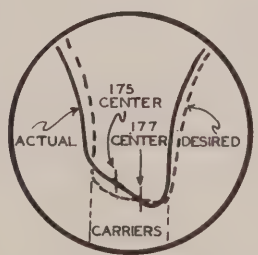


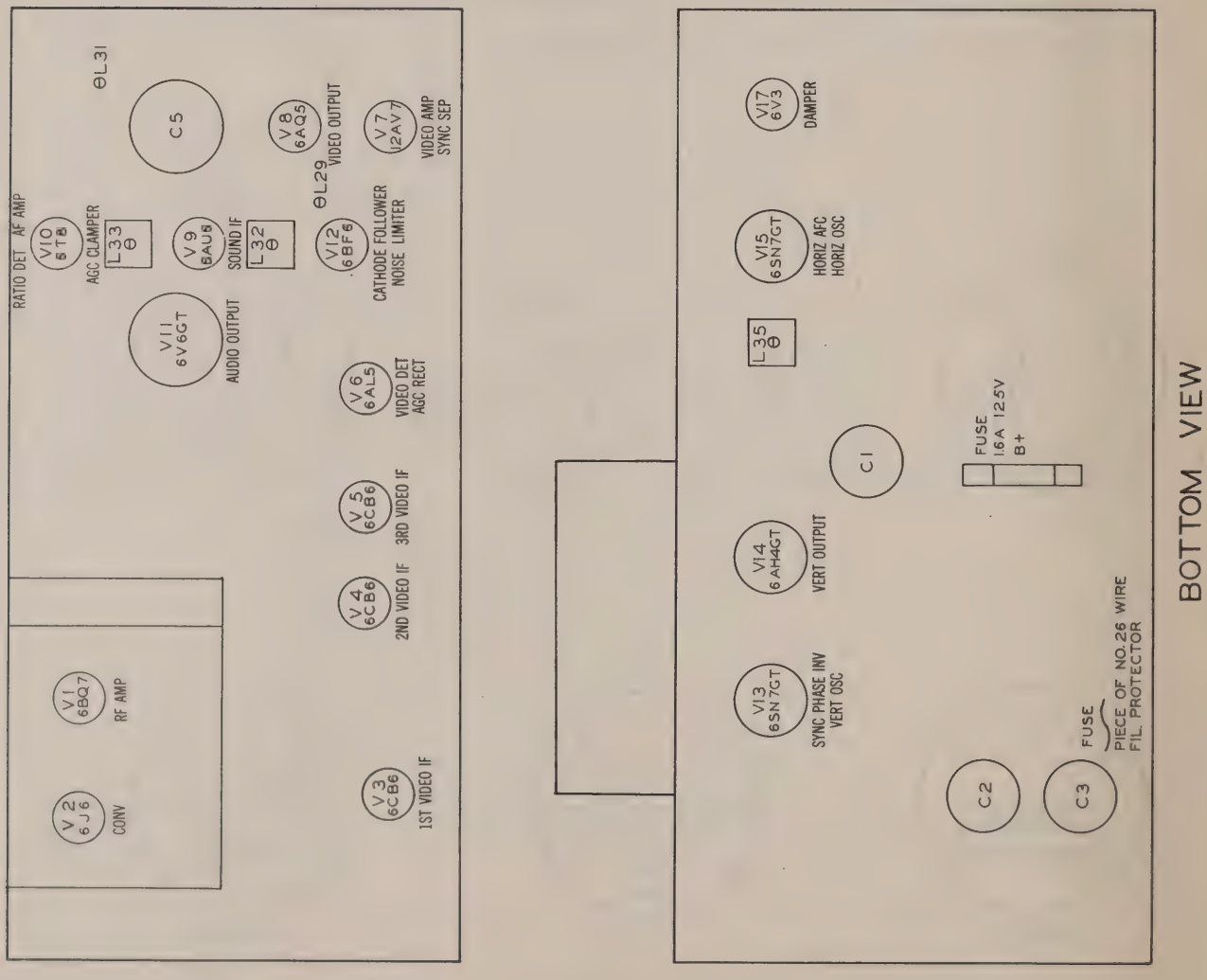
FIG.5B

PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T1845, 52-T2120, 52-T2150-W, 52-T2151, -L, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-T1852, 53-T2152 (Code 124)

RESISTANCE MEASUREMENTS

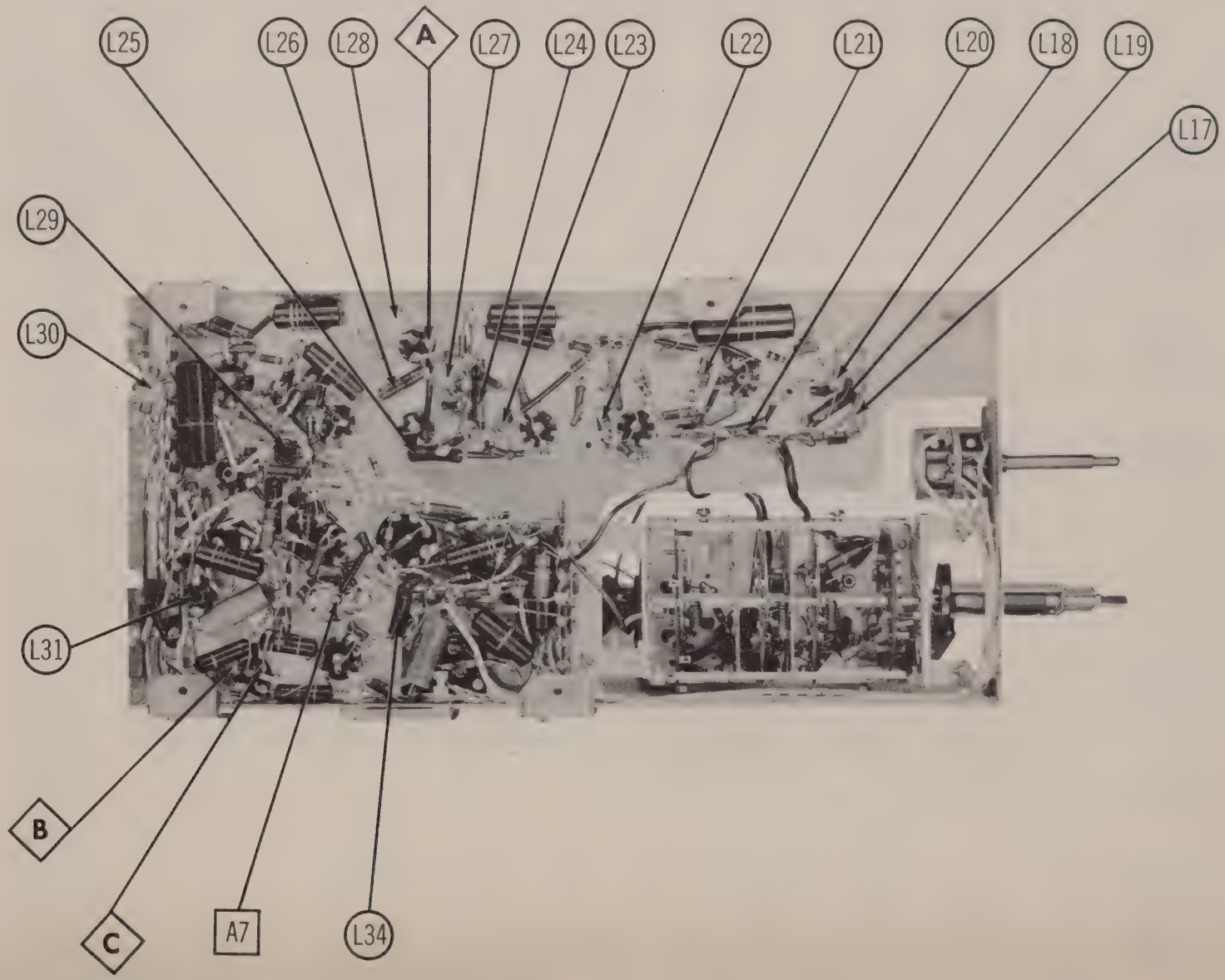
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	†1KΩ	1.1Meg.	INF	0Ω	.1Ω	INF	10Meg.	47Ω	0Ω
V 2	6J6	†17KΩ	†10.4KΩ	0Ω	.1Ω	10KΩ	100KΩ	0Ω		
V 3	6CB6	540KΩ	47Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 4	6CB6	540KΩ	47Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 5	6CB6	.2Ω	220Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 6	6AL5	3.1KΩ	330KΩ	.1Ω	0Ω	6.4KΩ	0Ω	6.4KΩ		
V 7	12AV7	15KΩ	7.1Meg.	0Ω	0Ω	0Ω	†7.8KΩ	1.2Meg.	100Ω	.1Ω
V 8	6AQ5	480KΩ	700Ω	0Ω	.1Ω	†1.8KΩ	†0Ω	480KΩ		
V 9	6AU6	4.6Ω	0Ω	0Ω	.1Ω	†15KΩ	†15KΩ	270Ω		
V 10	6T8	INF	34KΩ	INF	0Ω	.1Ω	10.6Meg.	0Ω	10Meg.	†275KΩ
V 11	6V6GT	47KΩ	.1Ω	†425Ω	†4.7KΩ	460KΩ	INF	0Ω	120Ω	
V 12	6BF6	8.9Meg.	10KΩ	.1Ω	0Ω	25KΩ	25KΩ	†1.8KΩ		
V 13	6SN7GT	300KΩ	#2.2Meg.	0Ω	1 Meg.	†14KΩ	0Ω	0Ω	.1Ω	
V 14	6AH4GT	1.8Meg.	0Ω	INF	INF	†314Ω	INF	.1Ω	0Ω	
V 15	6SN7GT	1.2Meg.	†28KΩ	300KΩ	290KΩ	†59KΩ	42Ω	.1Ω	0Ω	
V 16	6BQ6GT	INF	.1Ω	INF	†7.1KΩ	1.2Meg.	INF	0Ω	0Ω	TOPCAP #24Ω
V 17	6V3	INF	†2Ω	INF	.1Ω	0Ω	INF	†2Ω	INF PIN 9 †2Ω	TOPCAP 230KΩ
V 18	1B3GT	PINS 1-8 HAVE INF RESISTANCE								TOPCAP #744Ω
V 19	21EP4A	0Ω	470KΩ	PIN 10 # 120KΩ	PIN 11 130KΩ	PIN 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED.
† MEASURED FROM OUTPUT OF M1.
# MEASURED FROM "TOPCAP" OF V17.

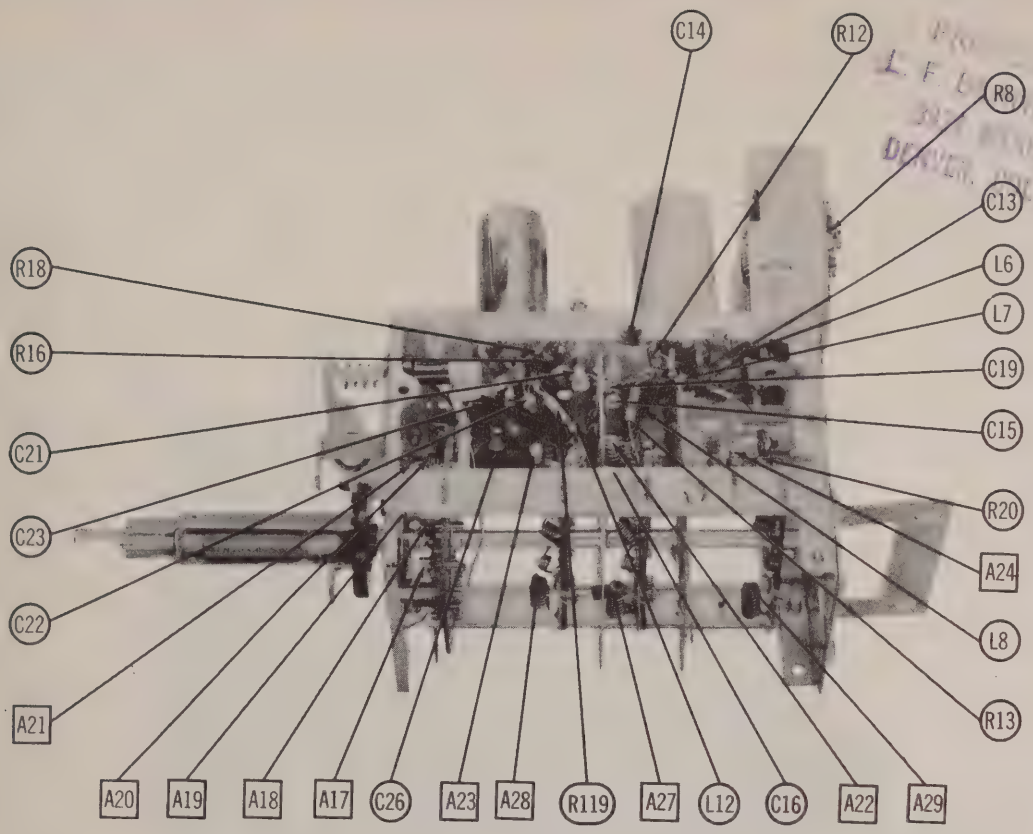


TUBE PLACEMENT CHART

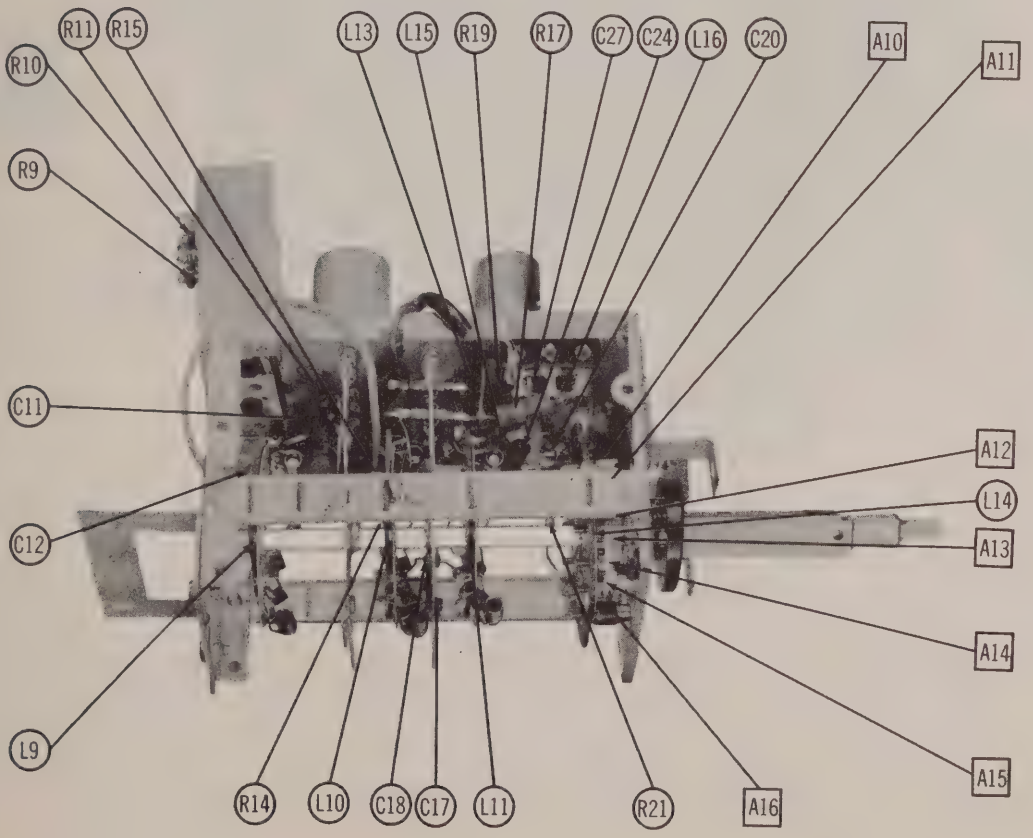
RF-IF CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATON



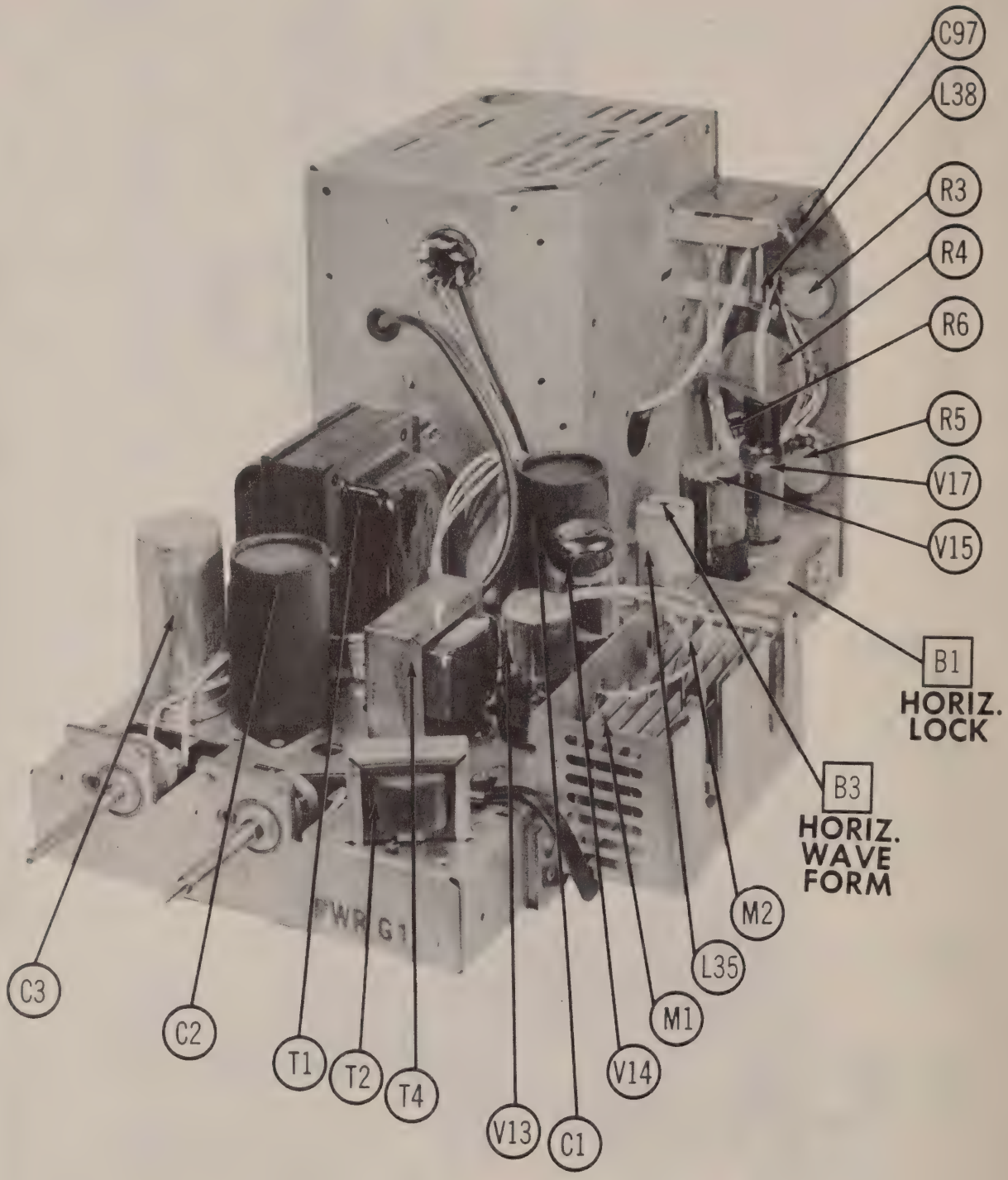
RF-IF CHASSIS-BOTTOM VIEW-INDUCTOR AND ALIGNMENT IDENTIFICATION



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



SWEEP CHASSIS-TOP VIEW

PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T1845, 52-T2120, 52-T2150-W, 52-T2151, -L, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-T1852, 53-T2152 (Code 124)

SWEEP CHASSIS-CAPACITOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp	6CB6	6CB6	7CM	
V5	3rd Video IF Amp	6CB6	6CB6	7CM	
V6	Video Detector - AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Amplifier - Sync Separator	12AV7	12AV7	9A	
V8	Video Output	6AQ5	6AQ5	7BZ	
V9	Sound IF Amp.	6AU6	6AU6	7BF	
V10	Ratio Detector - AF Amplifier - AGC Clamper	6T8	6T8	9E	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12A	Cathode Follower - Noise Limiter	6BF6	6BF6	7BT	
B	Cathode Follower - Noise Limiter	6AT6	6AT6	7BT	
V13	Sync Phase Inv. - Vert. Oscillator	6SN7GTA	6SN7GTA	8BD	
V14	Vert. Output	6AH4GT	6AH4GT	8EL	
V15	Horiz. AFC - Horiz Oscillator	6SN7GTA	6SN7GTA	8BD	
V16	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V17	Damper	6V3	6V3	9BD	
V18	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
19A	21EP4	21EP4	12D	
		21EP4A	12D	
		21FP4	12C	
		21FP4A	12C	
B	17JP4		12D	
C	20DP4A	20DP4A	12D	
		20DP4	12D	
		20HP4	12C	
		20HP4A	12C	
		20LP4		
		20MP4	12C	
		20CP4	12D	
		20CP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	130	150	30-2570-56	E4A131		UPE15020		FP140	TVL-1428	
C2	130	150	30-2570-66	E4A131		UPE15020		FP140	TVL-1428	
C3A	▲100	300	30-2584-15	AFH3-102		UPT435		FP255	TVL-3765	
B	▲30	450						TC72		
C	▲30	300								
C4	10	50	30-2417-3	PRS450/10		BR105		TC32	TVA-1304	
C5A	▲40	300	30-2570-57	AFH4-134		UPT421145		FP478	TVL-4840	
B	▲20	300								
C	▲10	300								
D	10	300								
C6	2	50	30-2417-7	E36E6		BBR-2-50T		TC302	TVA-1301	
C7	470			SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C8	470			SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C9	33	500		1469-0035		5R5Q25		MCB220	MS-425	
C10	20		62-020309011	SI20	D6-200		GP1K-200	UC-542	5GA-Q2	
C11	220		62-122001001	SII20	D6-221		GP2K-221	UC-5322	5GA-T22	
C12	800		30-1238-7	BPD-0006	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C13	220		62-122001001	SII20	D6-221		GP2K-221	UC-5322	5GA-T22	
C14	10000		30-1238-2	BPD-01	DD-103	TM5BJ	821-01	DC-511	5HK-S1	
C15	.5-3		31-6520-3		829-3			CT565A		
C16	800		30-1238-7	BPD-0006	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C17	1.5		30-1221-9	SII.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C18	2.2		30-1221-6		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C19	.47		30-1221-15				NP0K-R47			
C20	39		62-039409011	SI39	D6-390		GP1K-390	UC-5439	5GA-Q39	
C21	.5-3		31-6520-7		829-3			CT565A		
C22	2.2		30-1224-66		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C23	39		62-039409011				N220K-390			
C24	220		62-122001001	SII20	D6-221		GP2K-221	UC-5322	5GA-T22	
C25	7.5		30-1224-8				NP0K-7R5			
C26	2-6		31-6520-4		829-6			CT552		
C27	1500		30-1225-10	SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C28	2.2		30-1221-6		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C29	10	500	60-001054 17	1469-00001		5R5Q1		MCB215	MS-41	
C30	.5-3		31-6520-5		829-3			CT565A		
C31	100		30-1224-18	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C32	680		62-168001001	SI680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C33	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C34	.5-3		31-6520-5		829-3			CT565A		
C35	68		62-068409011	SI68	D6-680	5W5Q7	GP1K-680	UC-5468	5GA-Q68	
C36	.22	400		P486-22		PTE4P22		PT4022	4TM-P22	
C37	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C38	680		62-168001001	SI680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C39	1-5		31-6520-9		829-6					
C40	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5GA-D1	
C41	1500			SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C42	.5-3		31-6520-5		829-3			CT565A		
C43	68		62-068409011	SI68	D6-680	5W5Q7	GP1K-680	UC-5468	5GA-Q68	
C44	68		62-068409011	SI68	D6-680	5W5Q7	GP1K-680	UC-5468	5GA-Q68	
C45	680		62-168001001	SI680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C46	.1	200		P388-1	DF-104	PJ2P1		PT401	2TM-P1	
C47	5		30-1234-38	SI5	TCZ-4.7	5W5V5	GP1K-050	ZT-555	5TCUB-V5	
C48	1500			SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C49	.068	200		P344-068		PTE4S68		PT4147	4TM-S68	Note 1
C50	.0033	400		P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C51	68		62-068409011	SI68	D6-680	5W5Q7	GP1K-680	UC-5468	5GA-Q68	
C52	56		62-056409001	SI56	D6-560		GP1K-560	UC-5456	5GA-Q56	
C53	.22	200		P488-22		PTE4P22		PT4025	2TM-P22	
C54	56		62-056409001	SI56	D6-560		GP1K-560	UC-5456	5GA-Q56	
C55	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C56	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C57	.068	400		P488-068		PTE4S68			4TM-S68	
C58	2.2		30-1221-6		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C59	.0033	400		P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C60	1500			SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C61	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C62	330		62-133001001	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C63	330		62-133001001	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	Note 2
C64	1500			SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C65	.0022	400		P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C66	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C67	.0068	400		P488-0068	D6-682	PTE6D68	GP2-333-682		6TM-D68	
C68	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C69	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C70	1500			SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C71	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C72	.0068	400		P488-0068	D6-682	PTE6D68	GP2-333-682		6TM-D68	
C73	.0068	1000		P1088-0068		PTE1D68			MB-D68	
C74	.022	400		P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C75	33		62-033009001	SI33	D6-330		GP1K-330	UC-5433	5GA-Q33	
C76	.015	200		P288-015		PTE6S15		TP400	6TM-S15	
C77	180	500	60-10185417	1468-0002	D6-181	5W5T2	GP2K-181	MC237	1FM-32	
C78	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C79	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C80	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C81	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C82	.033	200		P488-033				PTE6I33		
C83	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C84	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C85	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C86	120	500	60-10125237	1469-00015	D6-121	5R5T15	GP2K-121	MCB236		
C87	.0022	400		P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C88	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C89	.15	200		P288-15		PTE4P15		TP417	2TM-P15	
C90	.022	200		P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C91	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C92	270	500	60-10275337	1469-0003		5R5T3		MCB241	MS-33	
C93	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C94	470	500	60-10475411	1469-0005		5R5T5		MCB245	MS-35	
C95	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C96	56		30-1243-5							
C97	68	4000	30-1246-1							
C98	.047	400		P488-047		PTE4S47		PT4147	4TM-S47	

Note 1. Some models use .047MFD in this application.
Note 2. Some models use 390MMF in this application (Part #62-10395417)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1 A	75KΩ	½	33-5563-43	QJ-302*	RTV-241		UF753L	Horiz. Hold-Panel
B	250KΩ	½					UR254L	Vert. Hold-Rear
R2 A	2500Ω	2	33-5563-42		RTV-345			Contrast-wire Wound -Panel
B	10KΩ	2						Brightness-Wire Wound- Rear
R3A	50KΩ	½	33-5565-30	QII-123	AG-44-S	AB-31	SU-35	Horiz. Osc. Frequency
B	Shaft		Not Req.	RQ	FSK-1/4	AK-1	Not Req.	Attach to R3A
R4A	20KΩ	4	33-5546-43		A10-20K	SVP-996	M20MP	Width-Wire Wound.
B	Shaft		Not Req.		FKS-1/4	Not Req.	Not Req.	Attach to R4A
R5A	2.5Meg.	½	33-5565-32	QII-239	AG-84-S	AB-83	SU-656	Height
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	2.5Meg.	½	33-5565-32	QII-239	AG-84-S	AB-83	SU-565	Vert Linearity
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	2 Meg.	½	33-5564-14	QI8-139X	AT-116	BT-82-S	UT-451	Volume-Tapped ④ 1 Meg.
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R7A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R7A

* CONCENTRIKIT EQUIVALENT- KIT K-2, BASE ELEMENTS & SHAFTS B11-125 & P1-200 (panel)
B11-130 & R1-216 (rear)

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	NOTES
R8	1Meg	½		BTS-1Meg	
R9	10KΩ	½		BTS-10K	
R10	1Meg	½		BTS-1Meg	
R11	47Ω	½			
R12	2.2Meg	½		BTS-2.2Meg	
R13	2.2Meg	½			
R14	1000Ω	½		BTS-1000	Note 1
R15	2200Ω	½		BTS-2200	
R16	100KΩ	½			
R17	15KΩ	1	66-3154340	BTA-15K	
R18	10KΩ	½		BTS-10K	
R19	8200Ω	1	66-2824340	BTA-8200	
R20	10KΩ	½		BTS-10K	
R21	3300Ω	½		BTS-3300	
R22	22Ω	½			
R23	12KΩ	½		BTS-12K	
R24	47Ω	½			
R25	220Ω	½		BTS-220	
R26	330Ω	½		BTS-330	
R27	39Ω	½			Note 2
R28	1Ω	½	66-9108340		
R29	18KΩ	½		BTS-18K	
R30	47Ω	½			
R31	220Ω	½		BTS-220	
R32	100KΩ	½		BTS-100K	
R33	220Ω	½		BTS-220	
R34	220Ω	½		BTS-220	
R35	100KΩ	½		BTS-100K	
R36	330Ω	½		BTS-330	
R37	330KΩ	½		BTS-330K	
R38	3300Ω	½		BTS-3300	
R39	1.5Meg	½		BTS-1.5Meg	
R40	1.2Meg	½		BTS-1.2Meg	
R41	100Ω	½		BTS-100	
R42	2700Ω	½		BTS-2700	
R43	3300Ω	½		BTS-3300	
R44	680KΩ	½		BTS-680K	Note 3
R45	1.2Meg	½		BTS-1.2Meg	
R46	1000Ω	½		BTS-1000	
R47	1800Ω	7	32-1335-102	1 3/4A-1750	
R48	1800Ω	1	66-2184340	BTA-1800	
R49	100Ω	½			
R50	470KΩ	½		BTS-470K	
R51	120KΩ	½		BTS-120K	
R52	22KΩ	½		BTS-22K	
R53	82KΩ	1	66-3824340	BTA-82K	
R54	470KΩ	1	66-4474340	BTA-470K	
R55	100Ω	½		BTS-100	
R56	270Ω	½		BTS-270	
R57	100Ω	½			

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	NOTES
R58	12KΩ	1	66-3124340	BTA-12K	
R59	270Ω	½		BTS-270	
R60	22KΩ	½		BTS-22K	
R61	33KΩ	½		BTS-33K	
R62	10Meg	½		BTS-10Meg	
R63	270KΩ	½		BTS-270K	
R64	270KΩ	½		BTS-270K	
R65	330KΩ	½		BTS-330K	
R66	680KΩ	½		BTS-680K	
R67	120Ω	1	66-1124340	BTA-120	
R68	4700Ω	½		BTS-4700	
R69	1.5Meg	½		BTS-1.5Meg	
R70	10Ω	½	66-0108340		
R71	68KΩ	½		BTS-68K	
R72	3.3Meg 5%	½		BTS-3.3Meg 5%	
R73	10KΩ	½		BTS-10K	
R74	4.7Meg	½		BTS-4.7Meg	
R75	33KΩ	½		BTS-33K	
R76	120KΩ	½		BTS-120K	
R77	270KΩ	½		BTS-270K	
R78	1.2Meg	½		BTS-1.2Meg	
R79	5.6Meg	½		BTS-5.6Meg	
R80	15KΩ	½		BTS-15K	
R81	100KΩ	½		BTS-100K	
R82	1Meg	½		BTS-1Meg	
R83	10KΩ	½		BTS-10K	
R84	6800Ω	1	66-2685340	BTA-6800	
R85	8200Ω	1	66-2824340	BTA-8200	
R86	12KΩ	2	66-3125340	BTA-12K	
R87	10KΩ	½		BTS-10K	
R88	4700Ω	½		BTS-4700	
R89	4700Ω	½		BTS-4700	
R90	10KΩ	½		BTS-10K	
R91	220KΩ	½		BTS-220K	
R92	15KΩ	½		BTS-15K	
R93	330KΩ	1		BTA-330 K	
R94	8200Ω	½		BTS-8200	
R95	560KΩ	½		BTS-560K	
R96	1Meg	½		BTS-1Meg	
R97	82KΩ	½		BTS-82K	
R98	3.3Meg	½		BTS-3.3Meg	
R99	1.2Meg	½		BTS-1.2Meg	
R100	470KΩ	½		BTS-470K	
R101	8200Ω	½		BTS-8200	
R102	390KΩ 5%	½	66-4398240	BTS-390K 5%	
R103	390KΩ 5%	½	66-4398240	BTS-390K 5%	
R104	18KΩ	½		BTS-18K	
R105	47KΩ	½		BTS-47K	
R106	180KΩ	½		BTS-180K	
R107	12KΩ	½		BTS-12K	
R108	2.2Meg	½		BTS-2.2Meg	
R109	220KΩ	½		BTS-220K	
R110	10KΩ	2	66-3105340	BTS-10K	
R111	4200Ω	5	33-1335-101	1 3/4A-4000	
R112	150KΩ	½		BTS-150K	
R113	120KΩ	½		BTS-120K	
R114	5600Ω	2	66-2565340	BTB-5600	
R115	*				
R116	47KΩ	1	66-3474340	BTA-47K	
R117	10Ω	15	33-3448-4		
R118	2500	8	33-3448-5	1 3/4A-2500	
R119	8200	½		BTS-8200	

Note 1. Some models use a 330Ω resistor in this application.
Note 2. Some models use a 22Ω resistor in this application.
Note 3. Some models use a 1.2Meg resistor in this application.
* Length of No. 24 wire 17 inches long.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC ③ .66A	6.3VAC ③ 10A			32-8538	P-2948	P-6308 ①	F0-610	F-21A

① Drill new mtg. holes

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	170Ω	330Ω	32-8431-4			TB-0-4		Vert Osc. Trans.
T3	782 Tap ③ 176, 39Ω 62Ω	0Ω	32-8431-2 ① 32-8555					Horiz. Output Trans.
T4	310Ω		32-8539					Vert Output Trans.
T5A	42Ω		32-9648		MDF-71			Horiz. Deflection Coils
B	48Ω							Vert Deflection Coils

① Alternate vert. osc. trans.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	4.3KΩ	3.1Ω	425Ω	.85Ω	32-8242 32-4449-2 ②	A-3877 ①	A-2930-①	R0-8 ①	S-3X ①	① Drill one new mtg. hole. ② Alternate output transformer.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: PHILCO PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.1Ω	36-1646-5 36-1641-1 ① 36-1641-10 ②	ST-119 Mod. P10-T	10A31	① Used in models 52T2120, and 52T1821. ② Used in models 52T1822 and 52T1802.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.255A	57Ω	1.1HY			C-2906 ①	TR-1733 ①	C-21X

① Drill one new mtg. hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	Ant. Trans.	.6Ω	.6Ω	32-4432-2			
L3	Ant. Trans.	.6Ω	.6Ω	32-4432-2			
L4	FM Trap	0Ω		32-4550-3			
L5	4.5Mc Trap	.1Ω		32-4552			
L6	RF Choke	.2Ω		32-4548-13			
L7	RF Coupling	0Ω		32-4550			
L8	Fil. Choke	0Ω		32-4550-1			

PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T1845, 52-T2120, 52-T2150-W, 52-T2151, -L, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-T1852, 53-T2152 (Code 124)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L9	Ant. Coils	0Ω		76-7449			Includes Switch Wafer
L10	RF Coils	0Ω		76-7447			Includes Switch Wafer
L11	Mixer Grid Coils	0Ω		76-7445			Includes Switch Wafer
L12	Neut. Choke	.4Ω		32-4551			
L13	Fil. Choke	0Ω		32-4550-1			
L14	Osc. Coils	0Ω		76-7443			Includes Switch Wafer
L15	Plate Choke	0Ω		32-4550-2			
L16	Conv. Plate	.2Ω		32-4548-13			
L17	IF Coupling	0Ω	.2Ω	32-4548-9			
L18	RF Choke	.3Ω		32-4548-5			
L19	47.25MC Trap	0Ω		32-4112-42			
L20	Fil. Choke	.1Ω		32-4112-15			
L21	1st. Video IF	.5Ω		32-4548-12			
L22	2nd. Video IF	.4Ω	.2Ω	32-4548-11			
L23	3rd. Video IF	.6Ω		32-4548-6			
L24	RF Choke	8.2Ω		32-4422-27		CL-1	10 Microhenries
L25	Fil. Choke	.1Ω		32-4112-15			
L26	Peak. Coil	8.2Ω		32-4422-27		CL-1	10 Microhenries
L27	Peak. Coil	4.6Ω		32-4480-9	TV184		180 Microhenries
L28	Peak. Coil	.4Ω		32-4422-27			10 Microhenries
L29	4.5MC Trap	1.8Ω		32-4463-6	TV151		
L30	Peak. Coil	6.8Ω		32-4480-5	TV188		400 Microhenries
L31	Variable Peak. Coil	5.4Ω		32-4467-7			
L32	Sound IF	4.6Ω		32-4449-2			
L33	Ratio Det.	5.2Ω	.6Ω	32-4450-5			Tertiary Winding 1Ω
L34	Fil. Choke	.1Ω		32-4480-5			
L35	Horiz. Osc. Coil	42Ω	14Ω	32-8551			Stabilizer Winding 53Ω
L36	RF Choke	40Ω		32-4542-2			
L37	RF Choke	2.2Ω		32-4112-24			
L38	RF Choke	2Ω		32-4112-24			

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA PHILCO PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	NOTES
M1	.255A	179142	NH-5	6Q4	1090	6S300	
M2	.255A	179142	NH-5	6Q4	1090	6S300	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA PHILCO PART No. FUSE	PHILCO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	MDV	1.6A 125 V.	45-2656-23		31501.6 (3AG - Slo-Blo P/T)		MDV -1.6A	
M4			Piece of #26 wire		311010			

DIAL LIGHTS

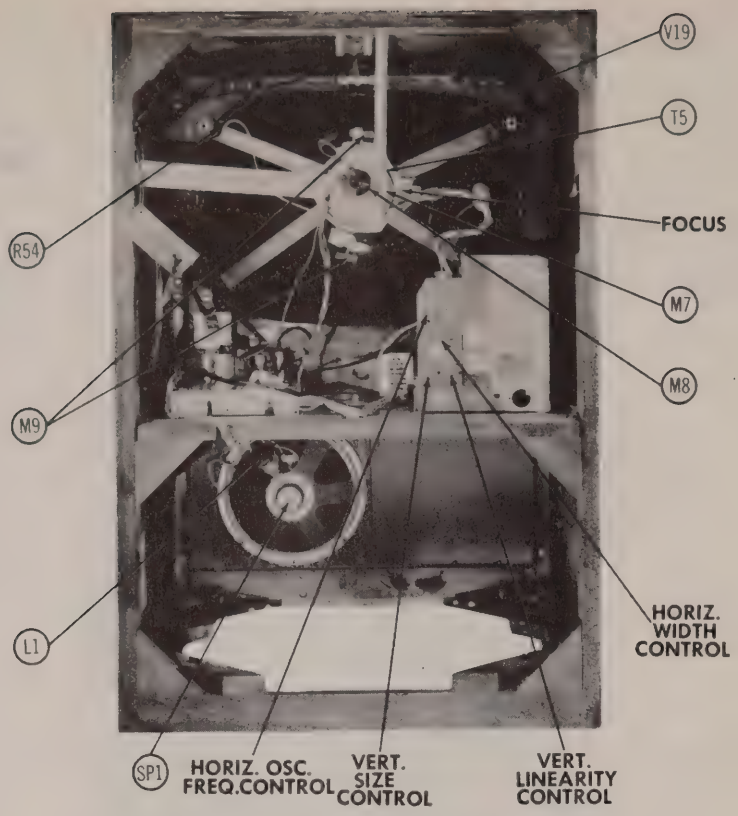
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		NOTES
M5	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M6	RF Tuner	76-7427	Complete
M7	Focus Magnet	76-6126-4	
M8	Ion Trap	76-6077-2	
M9	Magnet		Anti-Pin Cushion Correction (2) Required
B1	Trimmer	31-6473-22	Horiz. Lock-in (45-370MMF)
	Knob	34-4750	Antenna Adjust
	Knob	54-4799	Brightness & Vert. Hold
	Knob	54-4768	Brightness & Vert. Hold (Model 53-T1824)
	Knob	76-6046-14	Channel Selector
	Knob	76-6863-14	Channel Selector (Model 53-T1826)
	Knob	76-6863-18	Channel Selector (Models 53-T1824, T1825, T1852, T2152
	Knob	76-6104	Fine Tuning
	Knob	54-4803	Fine Tuning (Model 53-T1824)
	Knob	54-4797	Contrast & Horiz. Hold (Models 52-T1802, T1845, T2120, T2150-W, T2151-L, T2252, 53-T1824, T1825, T1852, T2152
	Knob	76-6048	Contrast & Horiz. Hold (Models 52-T1821, T1822, 53-T1826)
	Knob	76-6166	Off/On Volume (Models 52-T1802, T1845, T2120, T2150-W, T2151-L, T2252, 53-T1825, T1852, T2152)
	Knob	76-6581-1	Off/On Volume (Models 52-T1821, T1822, 53-T1826)
	Knob	54-4804-3	Off/On Volume (Models 53-T1824)
	Mask	54-8567-7	Model 53-T2152
	Mask	54-8645-2	Model 53-T1852
	Mask	54-8573-6	Model 52-T1821
	Mask	56-8578-12	Model 52-T2150-W
	Mask	56-8578-18	Model 52-T2151-L
	Mask	54-8633-3	Model 52-T1822
	Mask	56-8578-17	Model 52-T2120
	Window	54-7943-56	Model 52-T2252
	Window	54-7943-38	Models 52-T2150-W, T2151-L, 53-T2152
	Window	54-7943-41	Models 52-T1821, 53-T1826
	Window	54-7943-57	Model 52-T1822
	Window	54-7943-52	Model 52-T2120
	Window	54-8293-2	Model 52-T1802, 53-T1824, T1825
	Window	54-7943-54	Model 53-T1852

SWEEP CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

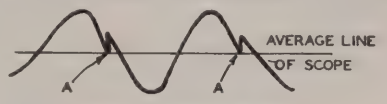
L. F. B.
3924 ME
DENVER, CO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Turn the horizontal hold control fully clockwise.
Adjust the horizontal oscillator frequency control until four diagonal black bars appear, sloping to the right.
Turn the horizontal hold control counter clockwise until the picture falls into, then out of sync.
If the picture will not lose sync at the extreme counterclockwise position momentarily interrupt the signal by turning to another channel, then back again.
Turn the horizontal hold control slowly clockwise and note the least number of sloping black bars just before the picture synchronizes. Adjust the horizontal lock trimmer, (B1) until this number is from two to two and and one-half.
Adjustment of the horizontal frequency slug, (B2) and the horizontal wavefrom slug, (B3) should not be necessary unless previous adjustments noted above fail to yeyield satisfactory horizontal sync.
Synchronize the picture by meams of the horizontal hold control and the horizontal frequency control.
If these controls fail to synchronize the picture adjust B2.
Connect the vertical amplifier of an oscilloscope through 15MMF to pin 6 (cathode) of V15.
Connect low side to chassis.
Adjust B3 for a waveform as in fig. 6.
The average line of scope is established by momentarily shorting the scope leads toghther.
Turn the horizontal hold control fully clockwise.
Adjust the horizontal frequency control until four diagonal black bars appear, sloping to the right.
If four bars cannot be obtained by adjusting the horizontal frequency control, adjust B2.
Adjust the width control for a picture slightly wider than enough to fill the picture mask.



POINT A SHALL COINCIDE WITH THE AVERAGE LINE OF SCOPE

FIG.6

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push on type control knobs from front panel.
2. Remove spring clip. Remove plastic cup from behind finetuning knob.
3. Remove antenna leads fromrear cover. Remove 12 wood screws. Remove rear cover.
4. Disconnect deflection & focus plug, volume control plug, speaker plug, inter-chassis connecting cable, HV lead, Crt. socket, ground strap and channel light.
5. Remove 8 chassis bolts. Remove RF-IF chassis and sweep chassis.
6. Remove 4 speaker nuts. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

HIGH VOLTAGE COMPARTMENT

RAULAND MODEL 1810

PROPERTY OF
J. F. BLANKEN
3924 MEADE ST.
DENVER, COLORADO

RAULAND
MODEL 1810

RAULAND
MODEL 1810

TRADE NAME	Rauland Model 1810
MANUFACTURER	Rauland-Borg Corp., 3523 W. Addison St., Chicago 23, Ill.
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES (SIX)	Types 6SC7 Pre Amp., 6SN7GTA Pre Amp-1st. AF Amp, 6SL7GT 2nd. AF Amp.-Phase Inv., (2) 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	117/130 Volts AC-60 Cycles RATING .525 Amp@ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

RAULAND
MODEL 1810

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RAULAND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Pre Amplifier	6SC7	6SC7	8S	
V2	Pre Amplifier - 1st. AF Amplifier	6SN7GTA	6SN7GTA	8BD	
V3	2nd. AF Amplifier - Phase Inverter	6SL7GT	6SL7GT	8BD	
V4	Audio Output	6V6GT	6V6GT	7AC	
V5	Audio Output	6V6GT	6V6GT	7AC	
V6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

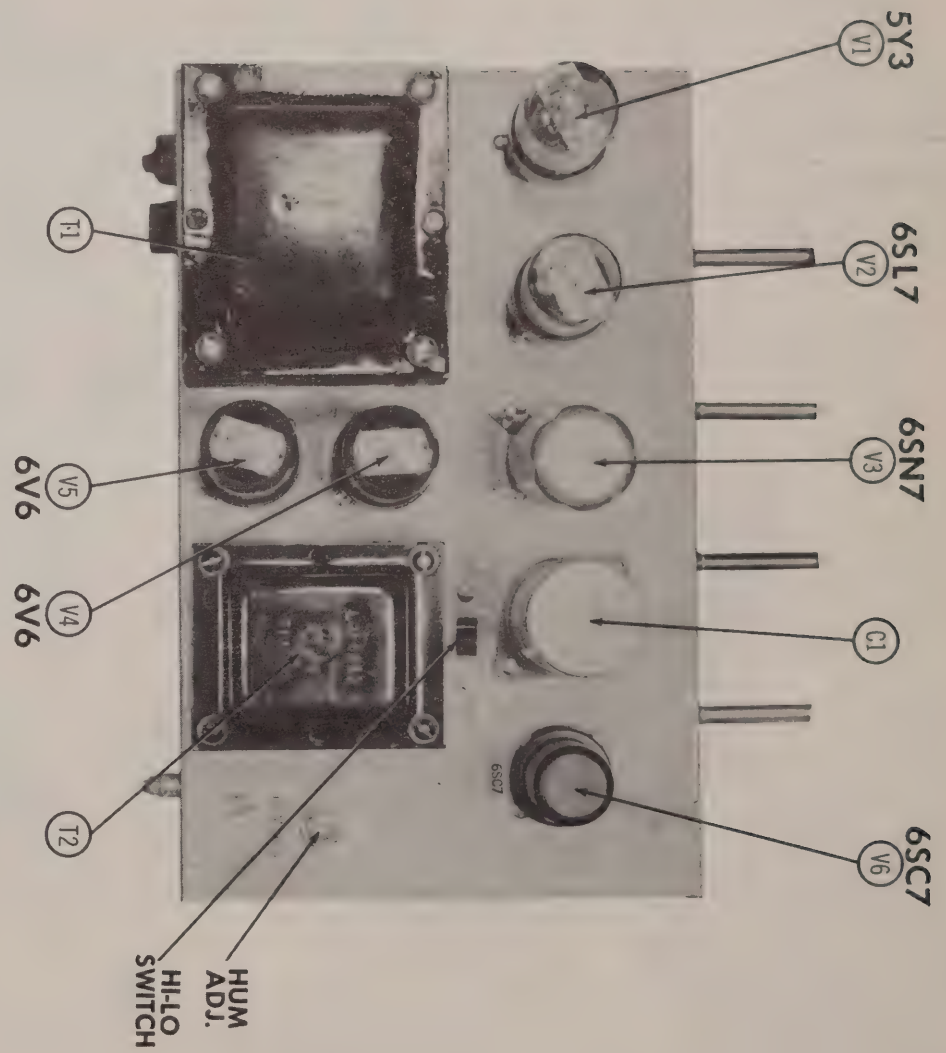
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450		AFH4-124		UP41145		FP476	TVL-4840	
B	■10	450								
C	▲10	450								
D	10	450								
C2	8	450		PRS450/8		BR845A		TC71	TVA-1704	
C3	40	25		PRS25/50		BR502A		TC29	TVA-1206	
C4	40	25		PRS25/50		BR502A		TC29	TVA-1206	
C5	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C6	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C7	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C8	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C9	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C10	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C11	.033	600		P688-033		PTE6S3		PTE6133	6TM-S22	
C12	.022	600		P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C13	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C14	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C15	.47	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C16	330	500		1468-00035	D6-331		GP2K-331	UC-5333	1FM-335	
C17	.022	600		P688-002		PTE6S22		PT-6122	6TM-S22	
C18	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C19	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C20	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RAULAND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	15KΩ	½	RP-504AC					Volume-Panel
B	500KΩ	½						Bass Boost & SW-Rear
R2A	250KΩ	½	RP-254L					Bass- Panel
B	250KΩ	½						Bass-Rear
R2A	200KΩ	½	RP-204A		AT-38	BT-53		Treble-Tapped @ 100KΩ
B	Shaft		Not Req.		FS-3			Attach to R3A
R4A	100Ω	½	RPW-101B	W-100	A43-100	VK-121	R100L	Hum Balance-Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R4A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RAULAND PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R5	4.7Meg	1/2		BTS-4.7Meg	
R6	220KΩ	1/2		BTS-220K	
R7	220KΩ	1/2		BTS-220K	
R8	4.7Meg	1/2		BTS-4.7Meg	
R9	150KΩ	1/2		BTS-150K	
R10	33KΩ	1/2		BTS-33K	
R11	15KΩ	1/2		BTS-15K	
R12	68KΩ	1/2		BTS-68K	
R13	1 Meg	1/2		BTS-1 Meg	
R14	1500Ω	1/2		BTS-1500	
R15	100KΩ	1/2		BTS-100K	
R16	8200Ω	1/2		BTS-8200	
R17	100KΩ	1/2		BTS-100K	
R18	3300Ω	1/2		BTS-3300	
R19	100KΩ	1/2		BTS-100K	
R20	1500Ω	1/2		BTS-1500	
R21	100KΩ	1/2		BTS-100K	
R22	4700Ω	1/2		BTS-4700	
R23	47Ω	1/2		BTS-47	
R24	330KΩ	1/2		BTS-330K	
R25	220KΩ	1/2		BTS-220K	
R26	4700Ω	1/2		BTS-4700	
R27	100KΩ	1/2		BTS-100K	
R28	100KΩ	1/2		BTS-100K	
R29	220KΩ	1/2		BTS-220K	
R30	220KΩ	1/2		BTS-220K	
R31	250Ω	10	RW-2251A	1 3/4A-250	
R32	1000Ω	1/2		BTS-1000	
R33	22KΩ	1/2		BTS-22K	
R34	3300Ω	1		BTA-3300	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC .525A	670VCT .085ADC	5VAC @ 2A	6.3VAC @ 3.1A	LP-0168		P-2952		R-11B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	8.2KΩ	500Tap @16Ω, 8Ω	360Ω CT	10.5Ω Tap @ .51Ω, .44Ω	LO-0092				S-28X	

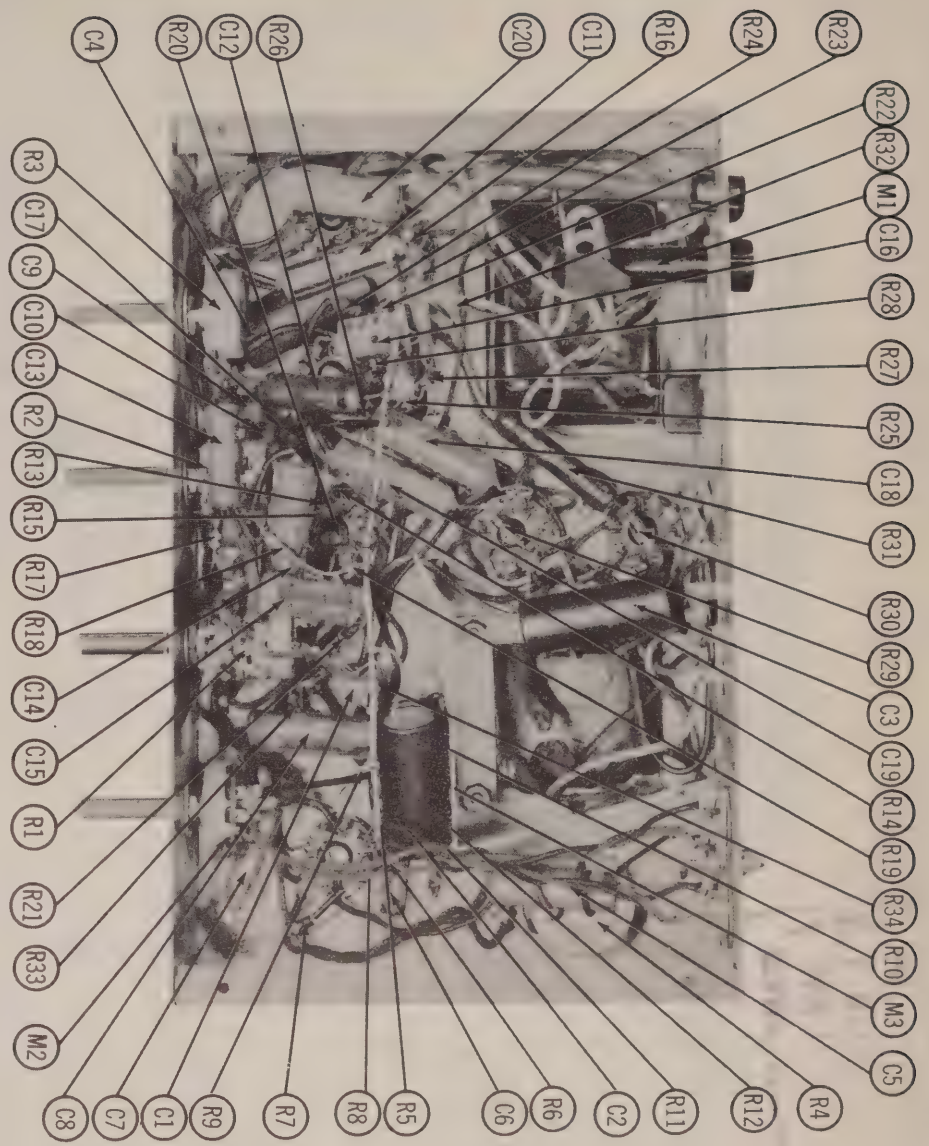
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA RAULAND PART No. FUSE	RAULAND PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	AGC	2A 250V			312002 (3AG)	341001	AGC-2	HKP

MISCELLANEOUS

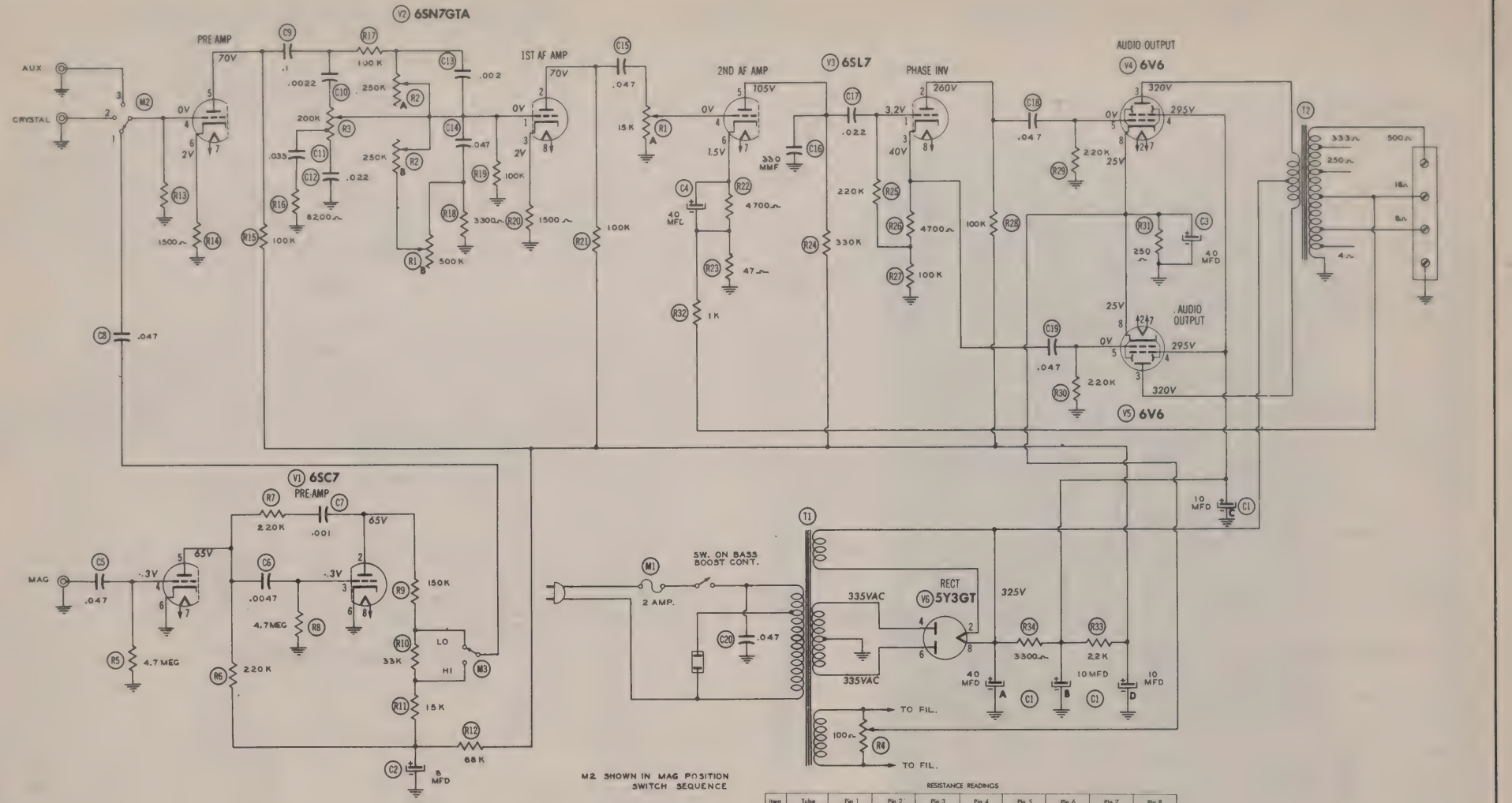
ITEM No.	PART NAME	RAULAND PART No.	NOTES
M2	Switch		Input Selector
M3	Switch		Level Selector

CHASSIS—BOTTOM VIEW



SET 179 FOLDER 10

RAULAND MODEL 1810



Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†290KΩ	4.7Meg	4.7Meg	†313KΩ	0Ω	¶22Ω	¶22Ω
V 2	6SN7GT	1KΩ	†125KΩ	1.5KΩ	1Meg	†125KΩ	1.5KΩ	¶22Ω	¶22Ω
V 3	6SL7GT	320KΩ	†125KΩ	100KΩ	20Ω	†355KΩ	4.7KΩ	¶22Ω	¶22Ω
V 4	6V6GT	0Ω	¶22Ω	†180Ω	†3.3KΩ	220KΩ	220KΩ	¶22Ω	250Ω
V 5	6V6GT	0Ω	¶22Ω	†180Ω	†3.3KΩ	220KΩ	INF	¶22Ω	250Ω
V 6	5Y3GT	0Ω	25KΩ	INF	86Ω	INF	92Ω	INF	25KΩ

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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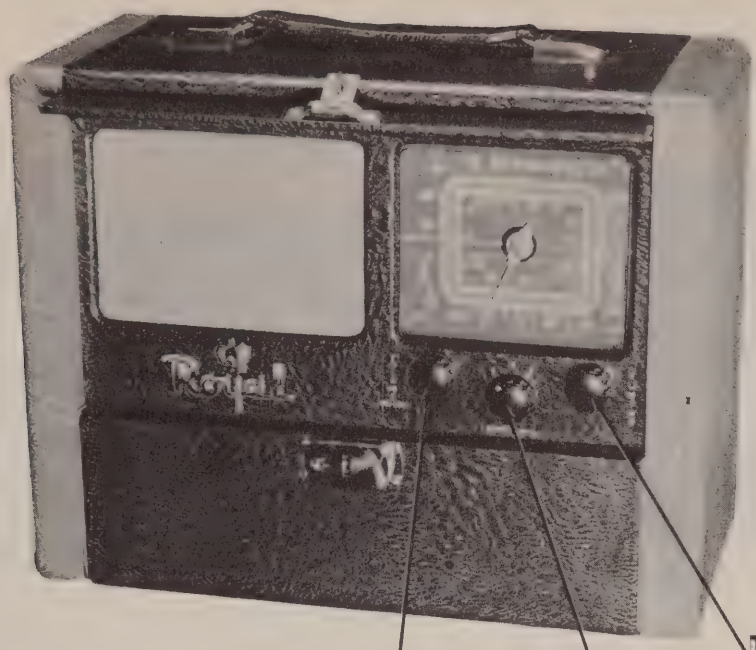
1. DC voltages measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

ROYAL
MODELS AN150, AN160



ROYAL
MODELS AN150, AN160

ROYAL MODEL AN150

TRADE NAME	Royal Models AN150, AN 160
MANUFACTURER	Royal Radio Co., 10 W. 33rd. St., New York 1, N.Y.
TYPE SET	Three Power Portable Multi-Band AM Superheterodyne Receiver
TUBES (SIX)	Types 1R5 Conv., 1N5GT 1st. IF Amp., 1N5GT 2nd IF Amp., 1H5GT Det.-AVC-AF Amp., 3Q5GT, Audio Output, 117Z6GT Recitifier
POWER SUPPLY	110-120 Volts AC/DC or 9 Volts "A" Supply & 90 Volts "B" Supply
RATING	.10 Amp. @ 117 Volts AC or 50 MA @ 9 Volts DC & 16 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1630 KC SHORT WAVE 2.1-6.3 MC, 6.2-18.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, tune tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1.	.1Mfd	High side to stator plates of front section of tuning gang. Low side to chassis.	455KC (400~Mod)	1 (extreme counter-clockwise	550KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200 MMF to reduce hum modulation.
2.	400Ω Carbon Resistor	High side to antenna terminal (disconnect hank) Low side to chassis.	18MC	3	18MC	"	A5, A6	Adjust A5 fully clockwise then counter clockwise to second output peak. Adjust A6 for maximum output while rocking tuning gang slightly.
3.	"	"	6MC	2	6MC	"	A7, A8	Adjust A7 fully clockwise then counter clockwise to second output peak. Adjust A8 for maximum output while rocking tuning gang slightly.
4.	200MMF	"	1500KC	1	1500 KC	"	A9, A10	Adjust for maximum output.
5.	"	"	600KC	"	600KC	"	A11	Adjust for maximum output while rocking tuning gang slightly

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ROYAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	1st. IF Amplifier	1N5GT	1N5GT	5Y	
V3	2nd. IF Amplifier	1N5GT	1N5GT	5Y	
V4	Det.-AVC-AF Amp.	1B5GT	1H5GT	5Z	
V5	Audio Output	3Q5GT	3Q5GT	7AP	
V6	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ROYAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▬40	150		AFH4-33		UP4415CD10				
B	■40	150								
C	▲100	50								
D	100	50								
C2	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C3	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	100									
C5	4									
C6	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7	1000	500		1464-001		IR5D1		MCB255	MS-21	
C8	3500	500								
C9	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C10	.25	200		P488-25		PJ2P25		PT4025	2TM-P25	
C11	100			S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C12	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C13	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C14	100			S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C15	100			S1100	D6-101	TM5T1	GP1K-101	UC-531		
C16	.003	400		P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C17	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C18	.003	400		P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C19	.003	600		P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C20	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	

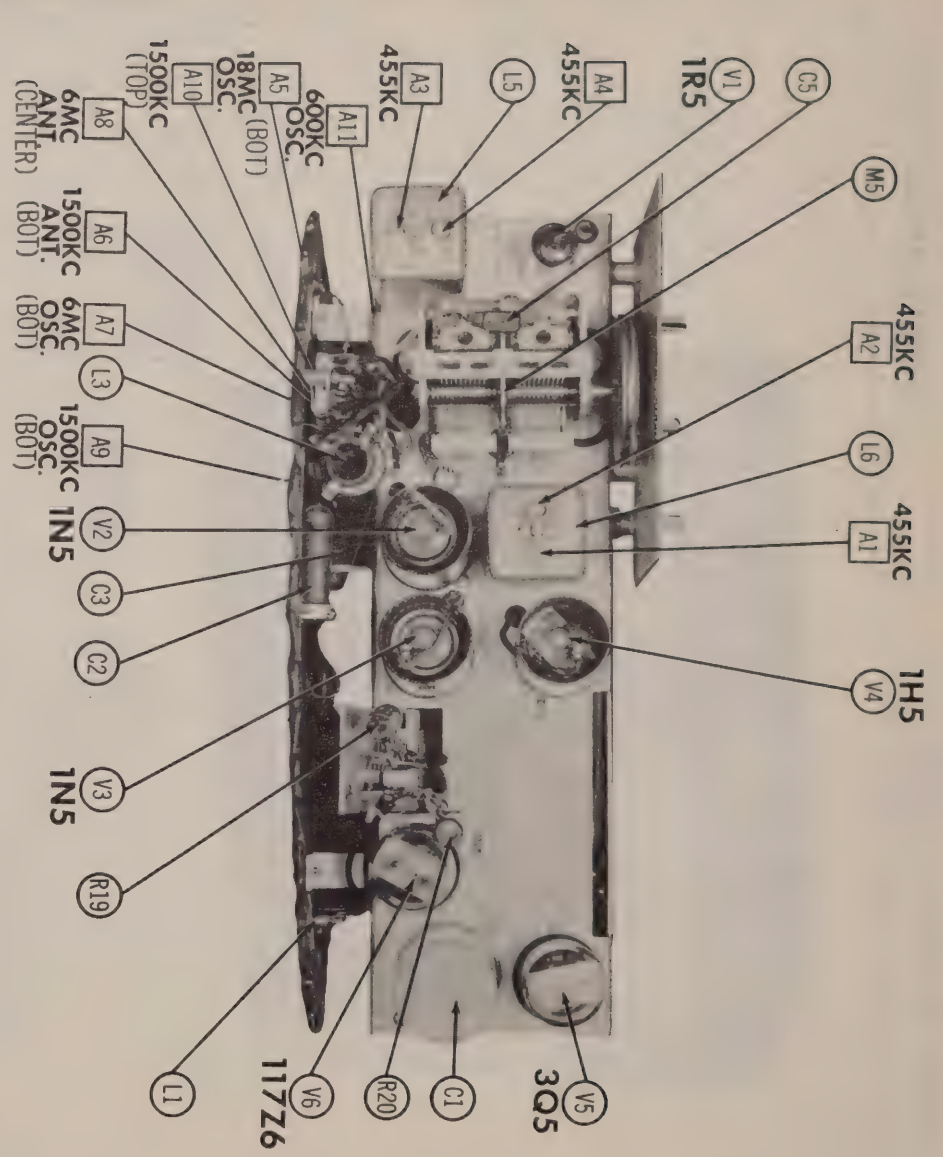
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ROYAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg.	1/2	BA012-125	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ROYAL PART No.	IRC PART No.	NOTES
R2	100KΩ	1/2		BTS-100K	
R3	100Ω	1/2			
R4	10Ω	1/2			
R5	10KΩ	1/2		BTS-10K	
R6	3.3Meg	1/2		BTS-3.3Meg	
R7	3.3Meg	1/2		BTS-3.3 Meg.	
R8	1000Ω	1/2		BTS-1000	
R9	15KΩ	1/2		BTS-15KΩ	
R10	150Ω	1/2		BTS-150	
R11	100KΩ	1/2		BTS-100K	
R12	100KΩ	1/2		BTS-100K	
R13	3.3 Meg	1/2		BTS-3.3Meg	
R14	3.3Meg	1/2		BTS-3.3Meg	
R15	1Meg	1/2		BTS-1Meg	
R16	2.2Meg	1/2		BTS-2.2Meg	
R17	4.7KΩ	1/2		BTS-4.7KΩ	
R18	1000Ω	1/2		BTS-1000	
R19	700Ω	10		1 3/4A-700	
R20	1400Ω	10		1 3/4A-1450	
R21	1500Ω	1/2		BTS-1500	
R22	68Ω	1/2			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ROYAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T 1	7.5KΩ	3.1Ω	460Ω	.4Ω	P-234C	A-8114 ①	A-2931 ①	RO-13 ①	S-7X ①	Bend mtg. tabs down file out slots. Mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ROYAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.1Ω	719	ST-105 Mod. P5-X	.5A07	

COILS (RF-IF)

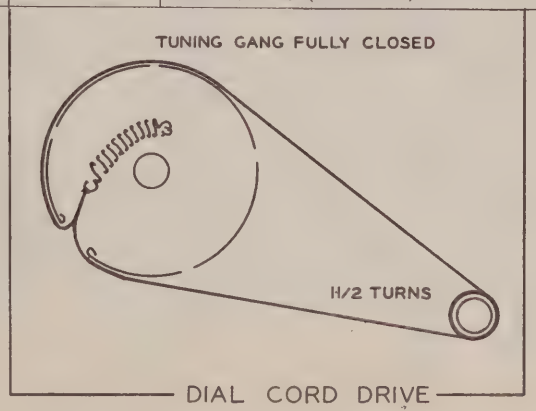
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ROYAL PART No.	MERIT PART No.	
L1	BC Loop Ant	0Ω	.7Ω			
L2A	BC Osc. Coil	4.2Ω	13Ω	TA210		
B	SW Osc. Coil	.3Ω	0Ω			1st. SW Band
L3	SW Ant. Coil	15.5Ω	0Ω	TA212		1st. & 2nd. SW Bands (Res. Second SW Band: Pri. -.3Ω; Sec. -0Ω)
L4	SW Osc. Coil	.7Ω	.7Ω	TA211		2nd. SW Band
L5	Input IF	17Ω	17Ω			
L6	Output	14Ω	14Ω			

BATTERIES

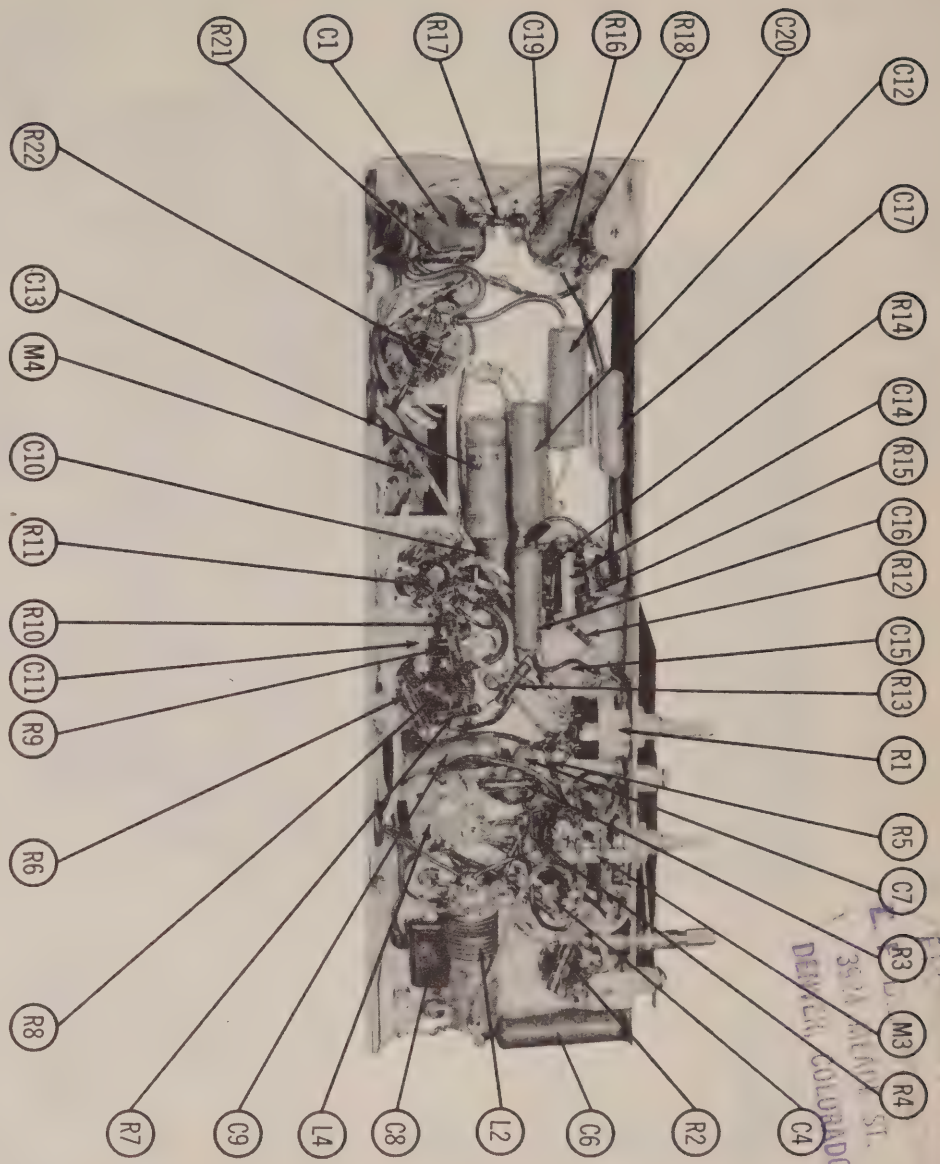
ITEM No.	VOLTAGE	ROYAL PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	4.5V.		746			G3			2 in Series
M2	45V.			482			B-30		2 in Series

MISCELLANEOUS

ITEM No.	PART NAME	ROYAL PART No.	NOTES
M3	Switch		Band Change
M4	Switch		Power Change-Over
M5	2 Gang Var. Cap.		(15-485MMF, 15-485MMF)
	Trimmer Strip		Ant. -(2.5-25MMF, 2.5-25MMF, 5-40MMF)
	Trimmer Strip		Osc. -(2.5-25MMF, 2.5-25MMF, 5-40MMF)
	Trimmer		BC Osc. Padder (200-700MMF)



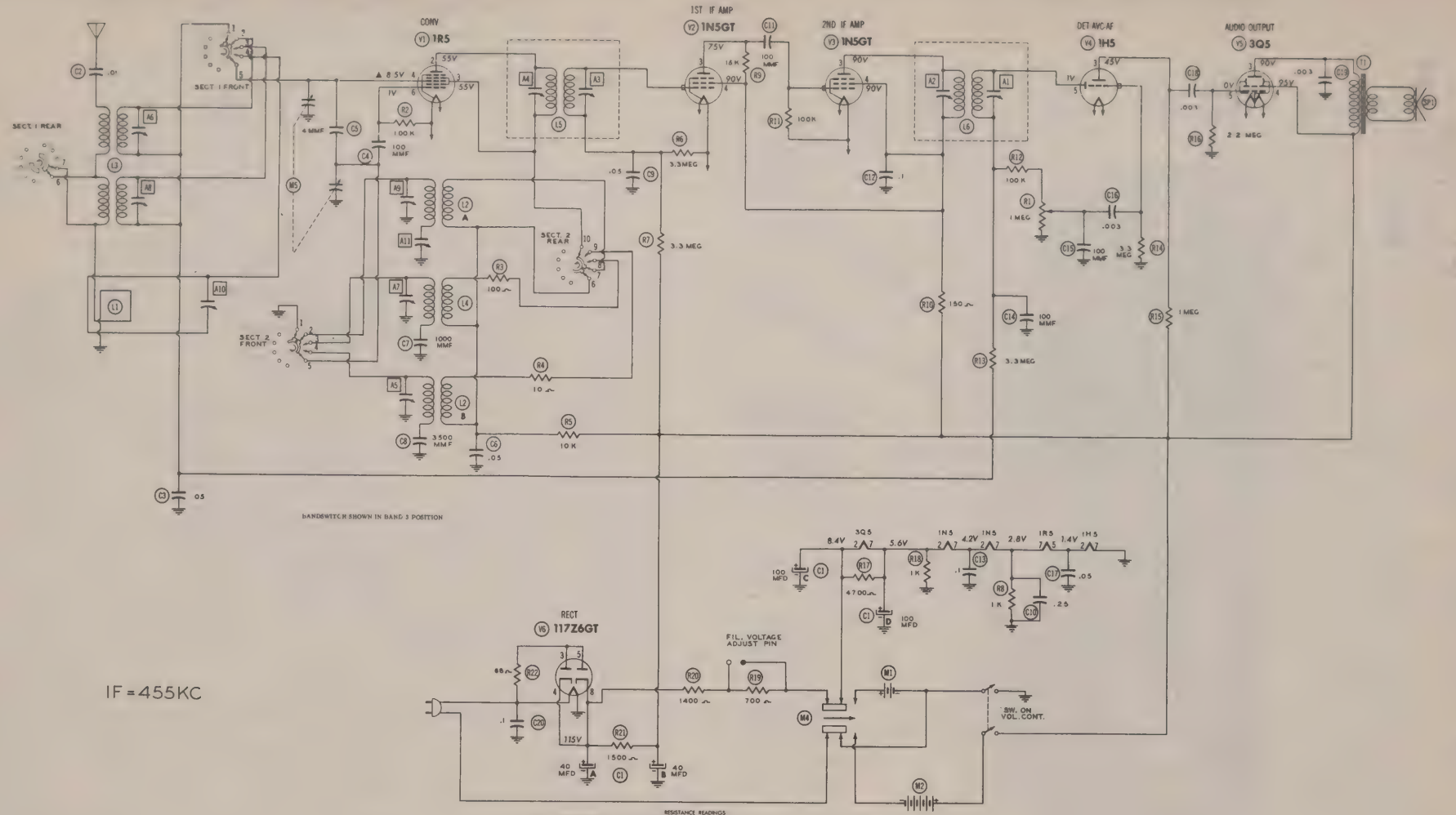
CHASSIS—BOTTOM VIEW



ROYAL MODEL AN150

DENVER, COLORADO

ROYAL MODEL AN150



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	TOPCAP
V 1	1R5	*	†11KΩ	†11KΩ	100KΩ	*	2.6Meg	*		
V 2	1N5GT	0Ω	*	†11KΩ	11.6KΩ	INF	2.8Meg	*	2.2Meg	2.2Meg
V 3	1N5GT	0Ω	*	11.5KΩ	11.6KΩ	11.5KΩ	100KΩ	*	INF	100KΩ
V 4	1H5GT	0Ω	*	†1Meg	11.5KΩ	1.1Meg	1.1Meg	0Ω	3.3Meg	3.3Meg
V 5	3Q5GT	0ΩΩ	*	†2KΩ	11.5KΩ	2.2Meg	†2KΩ	*	*	
V 6	117Z6GT	11.5KΩ	117Ω	185Ω	2.2KΩ	185Ω	0Ω	0Ω	2.2KΩ	

ALL MEASUREMENTS TAKEN WITH POWER CHANGEOVER SWITCH IN AC-DC POSITION ONLY
BAND SWITCH IN BC (540-1600KC) POSITION
† MEASURED FROM PINS 4 OR 8 OF V6
a TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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179-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. BLAIR
3924 MEADE
DENVER, COLORADO

STEELMAN
MODEL 517

TRADE NAME	Steelman Model 517
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver With 3 Speed Manual Record Player.
TUBES (FIVE)	See Parts List For Octal, Lock-In, or Miniature Type Tube Complement
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	.20 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1600 KC	"	"	A5	"
3.		Loop	1400 KC	Tune to 1400 KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

STEELMAN MODEL 517

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		STEELMAN PART No.	STANDARD REPLACEMENT		
V1A	Converter	12BE6	12BE6	7CH	
B	Converter	12SA7	12SA7	8R	
C	Converter	14Q7	14Q7	8AL	
V2A	IF Amplifier	12SK7	12SK7	8Q	
B	IF Amplifier	12BA6	12BA6	7BK	
C	IF Amplifier	14A7	14A7	8V	
V3A	Det.-AVC-AF Amp	14B6	14B6	8W	
B	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
C	Det.-AVC-AF Amp	12SQ7	12SQ7	8Q	
V4A	Audio Output	50C5	50C5	7CV	
B	Audio Output	50L6	50L6	7AC	
C	Audio Output	50A5	50A5	6AA	
V5A	Rectifier	35W4	35W4	5BQ	
B	Rectifier	35Z5	35Z5	6AD	
C	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■50	150		AFH2-15		UP5315		FP213	TVL-2432	
B	▲30	150								
C2	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3	200	500		1468-0002	D6-202	5W5T2	GP2K-201	MC237	1FM-32	
C4	150	500		1468-00015	D6-151	5W5T15	GP2K-151	MC236	1FM-315	
C5	.002	600		P688-002	D6-202	PTE6D2	GP2K-333-202	PT622	6TM-D2	
C6	150	500		1468-00015	D6-151	5W5T15	GP2K-151	MC236	1FM-315	
C7	.002	600		P688-002	D5-202	PTE6D2	GP2K-333-202	PT622	6TM-D2	
C8	.002	600		P688-002	D5-202	PTE6D2	GP2K-333-202	PT622	6TM-D2	
C9	.002	600		P688-002	D5-202	PTE6D2	GP2K-333-202	PT622	6TM-D2	
C10	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C11	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	

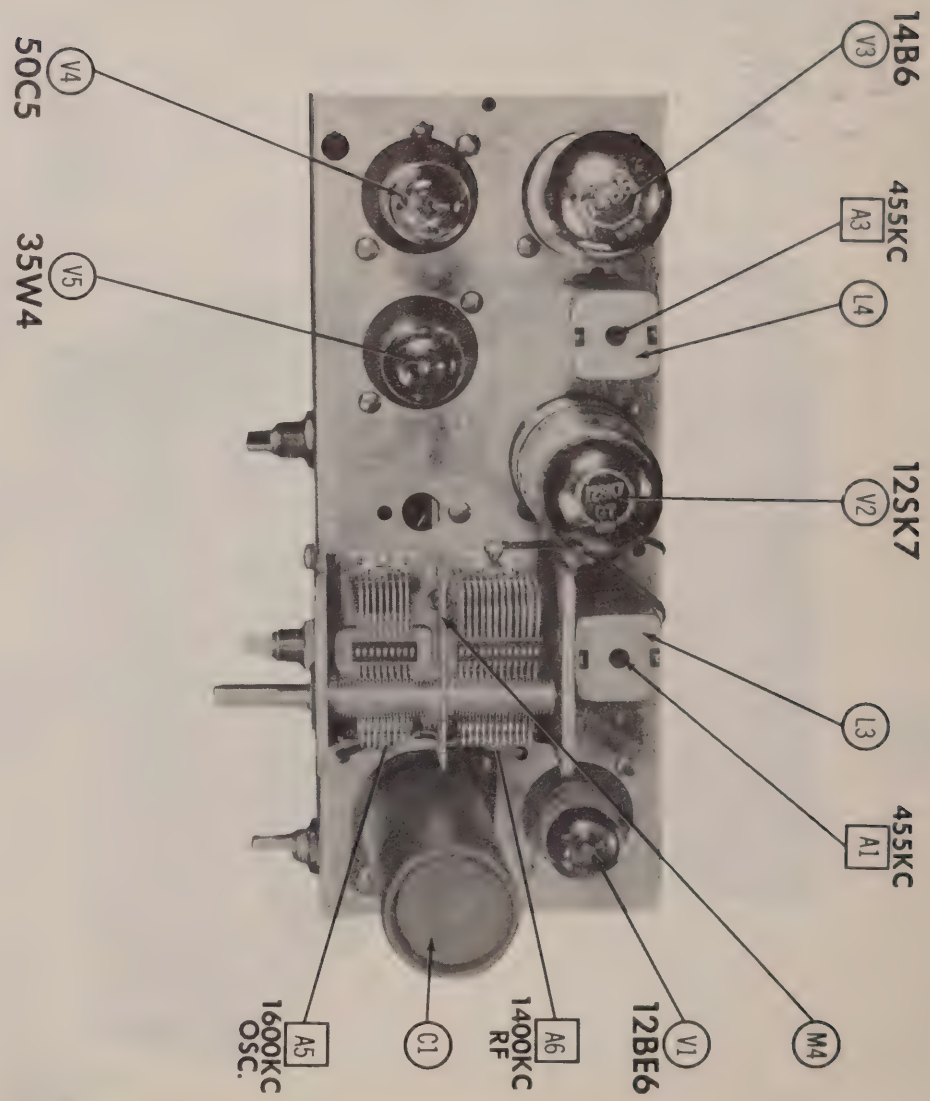
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	VC-20	Q13-133	AG-60-Z	B-60-S	U48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2 A	500KΩ	½		Q13-133	AG-60-Z	B-60	U-48	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R2 A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	STEELMAN PART No.	IRC PART No.	
R3	27KΩ	½		BTS-27K	
R4	330Ω	1		BTA-330	
R5	10Meg.	½		BTS-10Meg.	
R6	200KΩ	½			
R7	1.5Meg.	½		BTS-1.5Meg.	
R8	1Meg.	½		BTS-1 Meg.	
R9	220KΩ	½		BTS-220K	
R10	150Ω	½		BTS-150	
R11	2500Ω	2			
R12	18Ω	½			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		STEELMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	1.7KΩ	3.7Ω	168Ω	.42Ω	P70D	A-3332①	A2928 ①	R0-2 ①	S-2X ①	① Bend mtg. tabs down, file out slots. Mount on orignal mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4 3/4"	PM	3.7Ω	719	ST105 Mod. P5-X	5A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	STEELMAN PART No.	MERIT PART No.	
L1	Loop Ant.	3.2Ω				
L2	Osc. Coil	.6Ω	5.5Ω			
L3	Input IF	22Ω	22Ω			
L4	Output IF	22Ω	22Ω			

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	STEELMAN PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		LQD-1J	Q-33		X	96	0-1 or S-1 and 0-3 or S-3	♦ Complete Arm & Cart. Assembly.
		♦ 7-D		*901D		*2600		*Tone Arm

PHONO NEEDLE

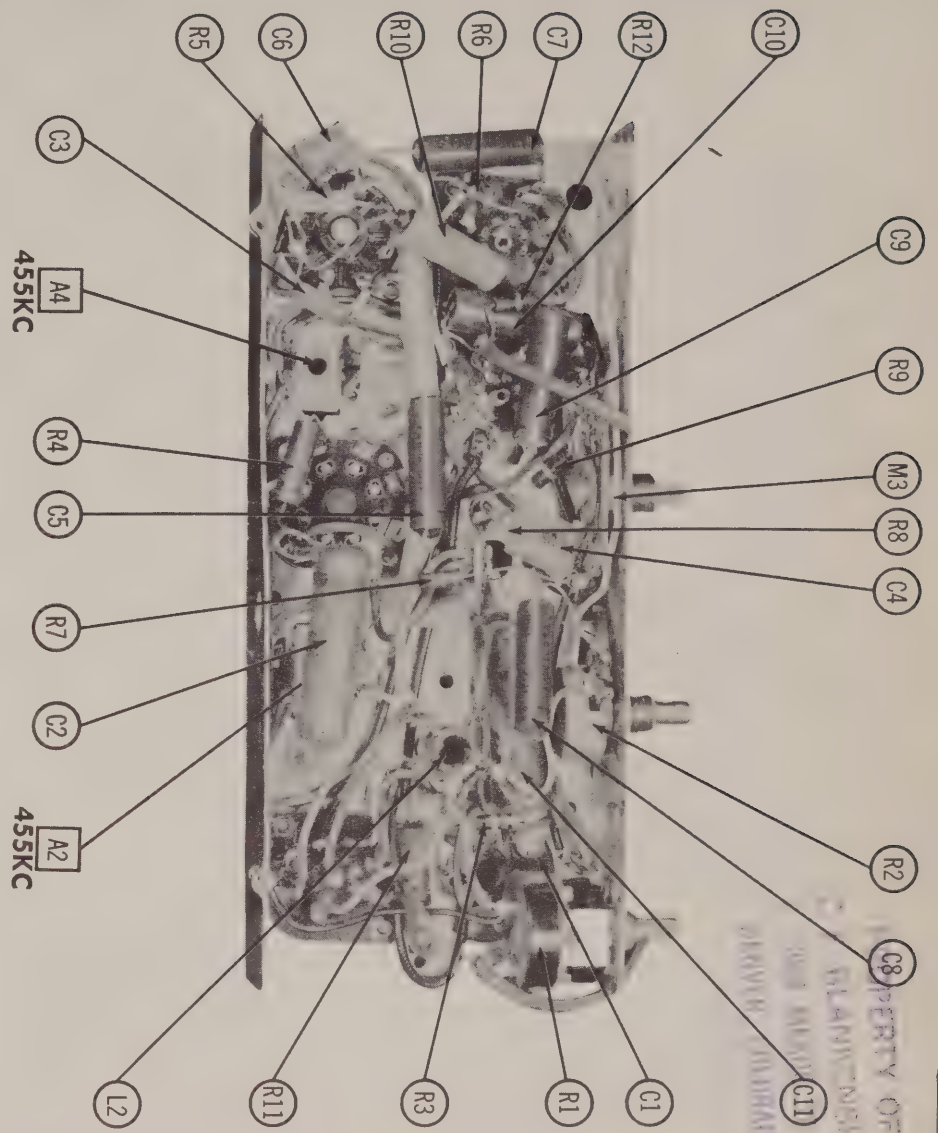
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	STEELMAN PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-2A or W-2S and W-2MGA or W-2MGS	A-80 or A-81 and A-80LP or A-81LP	

MISCELLANEOUS

ITEM No.	PART NAME	STEELMEN PART No.	NOTES
M3	Switch		Radio-Phono
M4	2 Gang Var. Cap		(36-425MMF, 27-199MMF)

CHASSIS—BOTTOM VIEW



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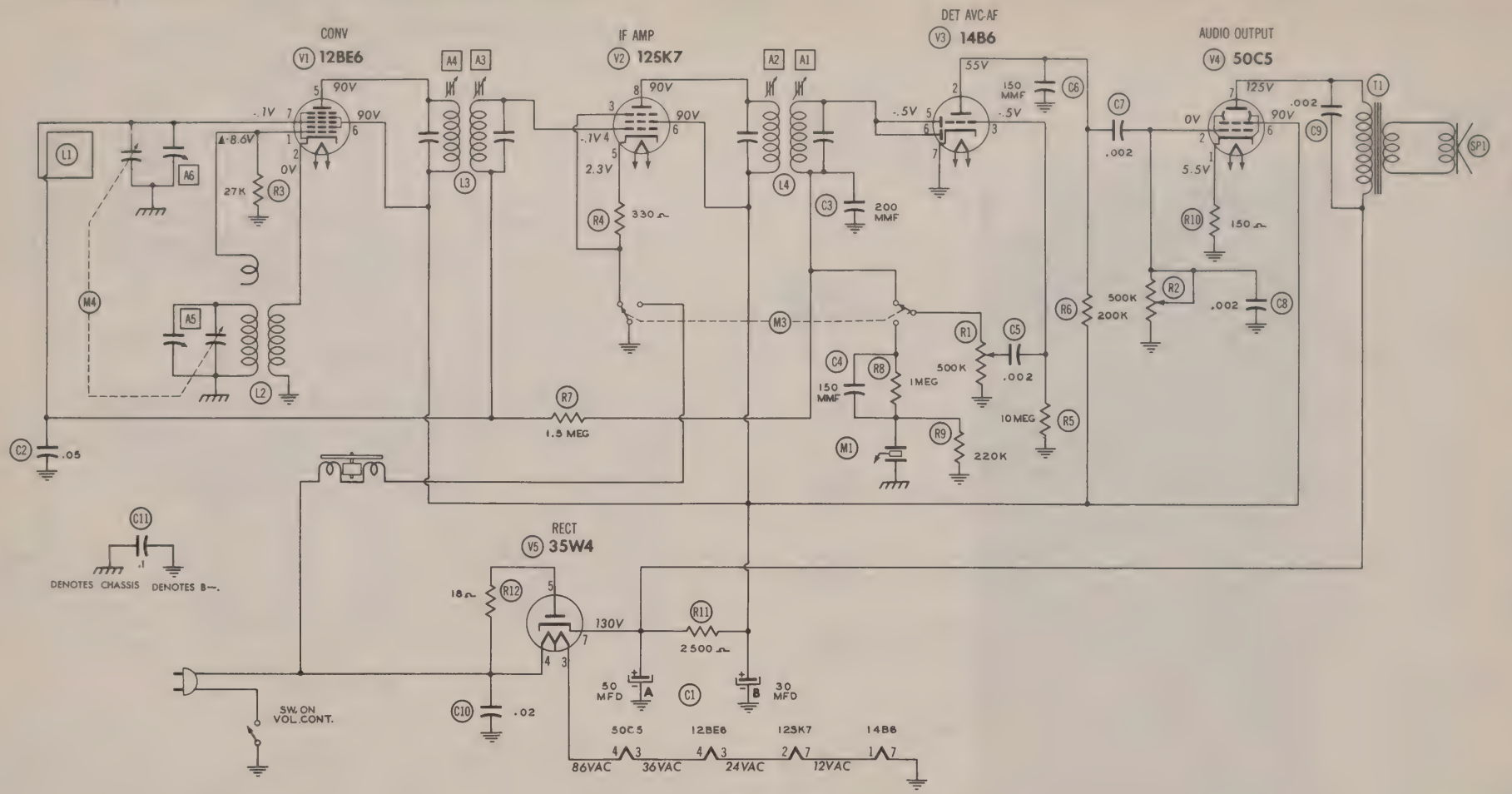

IF = 455KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	27KΩ	.6Ω	24Ω	36Ω	†2.5KΩ	†2.5KΩ	2Meg.	
V 2	12SK7GT	¶0Ω	24Ω	0Ω	2Meg	330Ω	†2.5KΩ	12Ω	†2.5KΩ
V 3	14B6	12Ω	†200KΩ	10Meg	0Ω	500KΩ	500KΩ	0Ω	0Ω
V 4	50C5	150Ω	500KΩ	36Ω	86Ω	500KΩ	†2.5KΩ	†168Ω	
V 5	35W4	†0Ω	INF	86Ω	121Ω	139Ω	103Ω	65KΩ	

ALL MEASUREMENTS TAKEN IN RADIO POSITION
• TAKEN WITH VACUUM TUBE VOLTMETER
¶ - MEASURED FROM CHASSIS.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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MODEL 2D2219A

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TRUETONE MODEL 2D2219A

PROPERTY OF
E. F. BLANKENSHIP
DENVER, COLORADO

TRUETONE MODEL 2D2219A

TRADE NAME	Truetone Model 2D2219A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Twenty-Two
POWER SUPPLY	110-115 Volts AC-60~ RATING 1.9 Amp. @ 115 Volts AC
TUNING RANGE-	Channels 2 thru 13 (Continuous Tuning)

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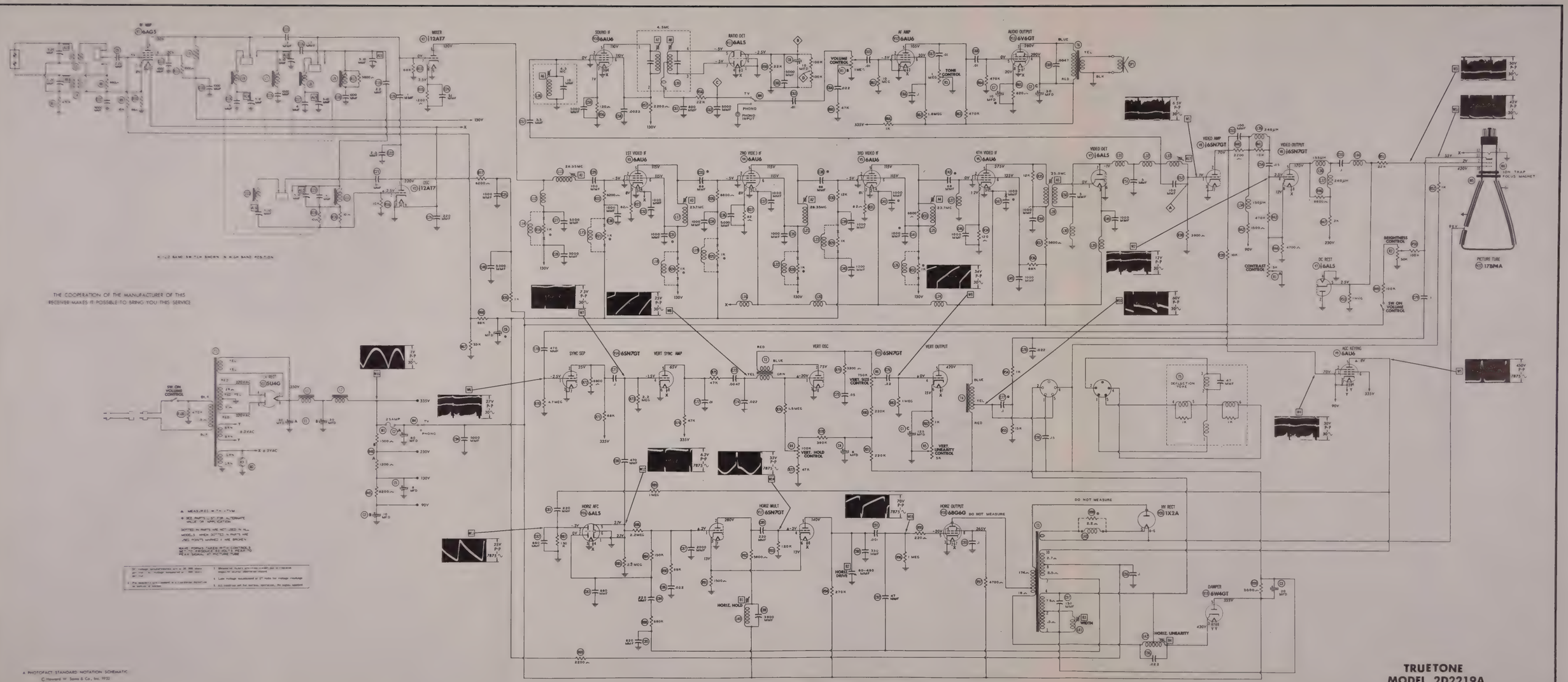
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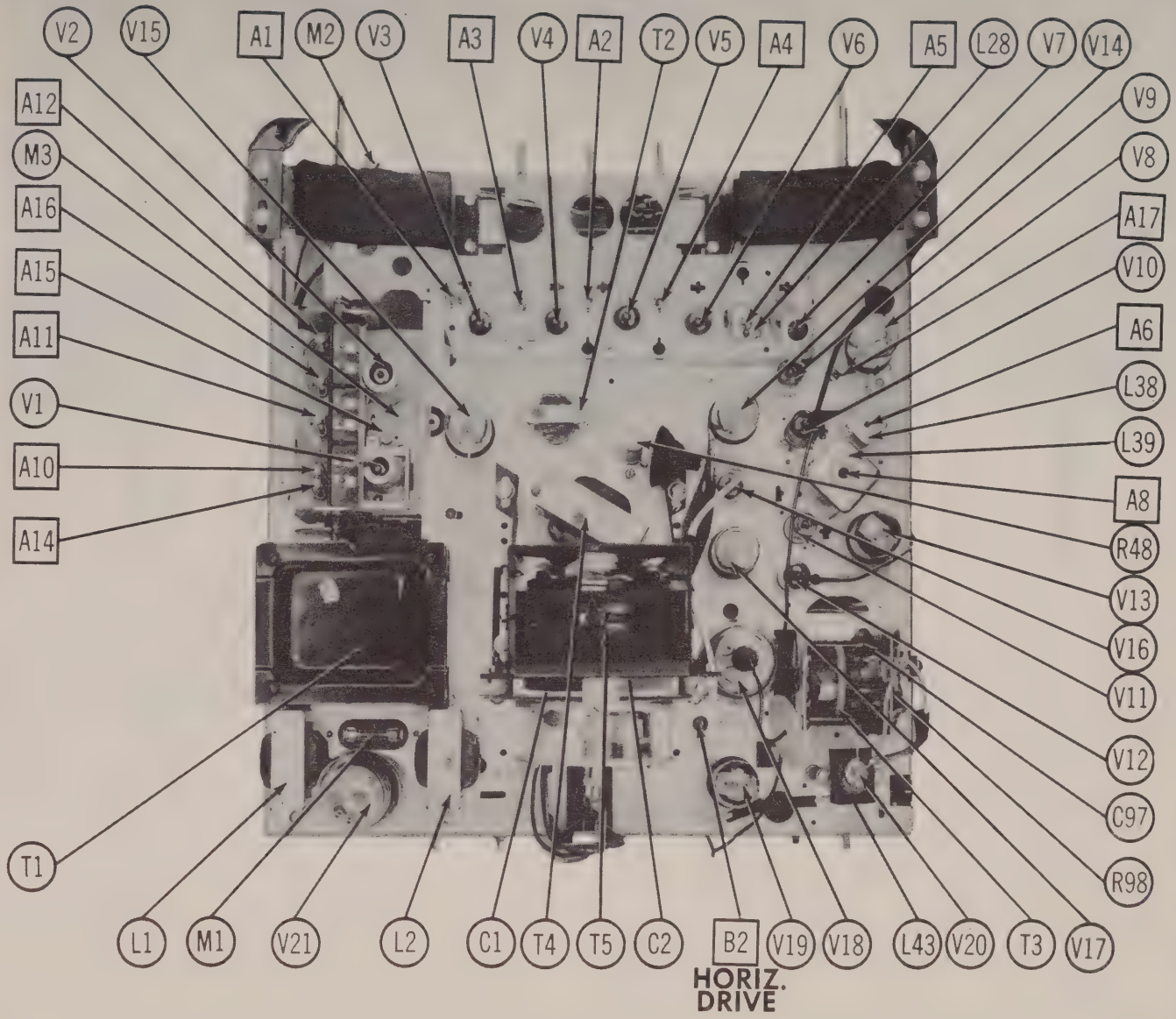

CHASSIS TOP VIEW

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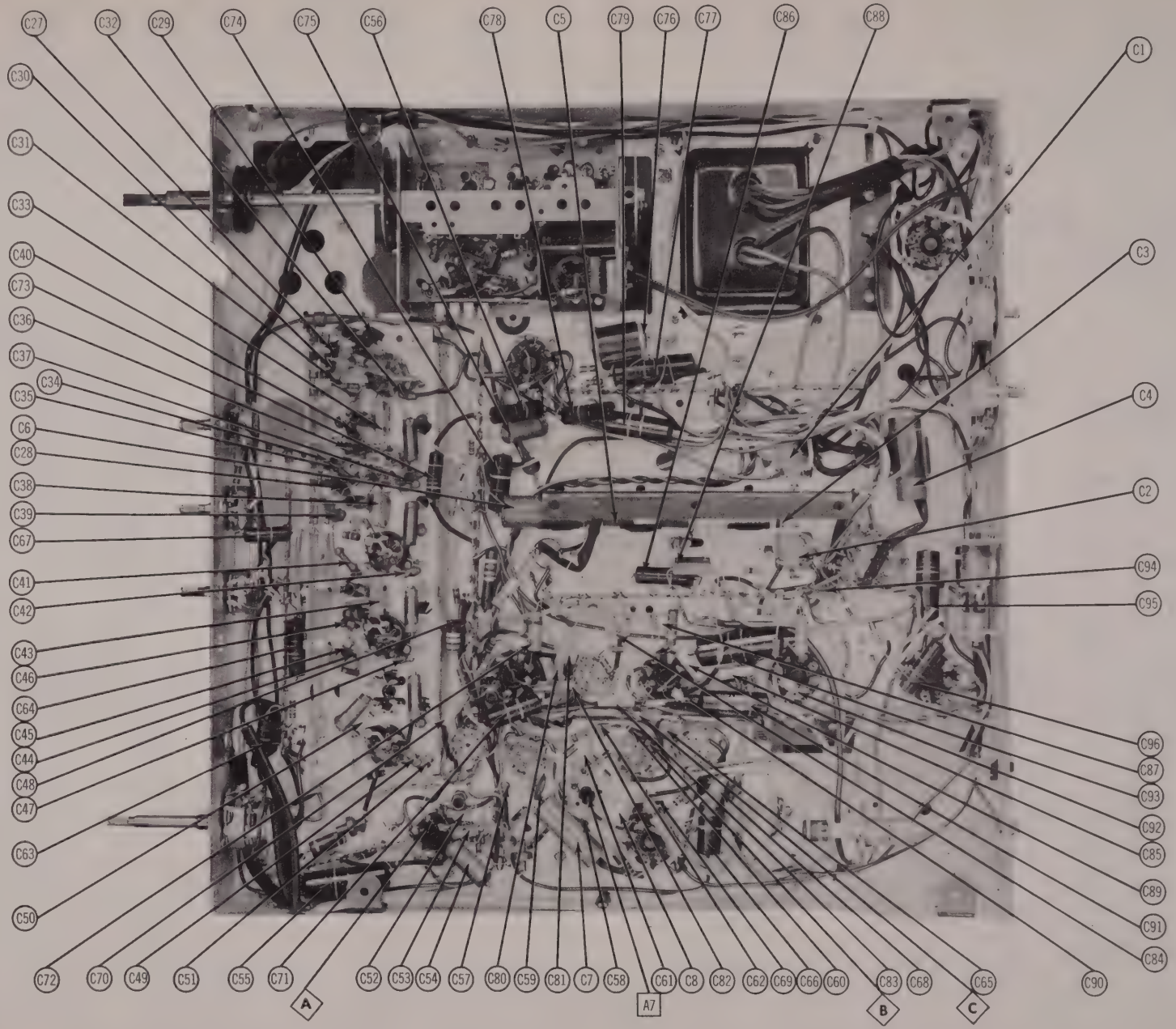
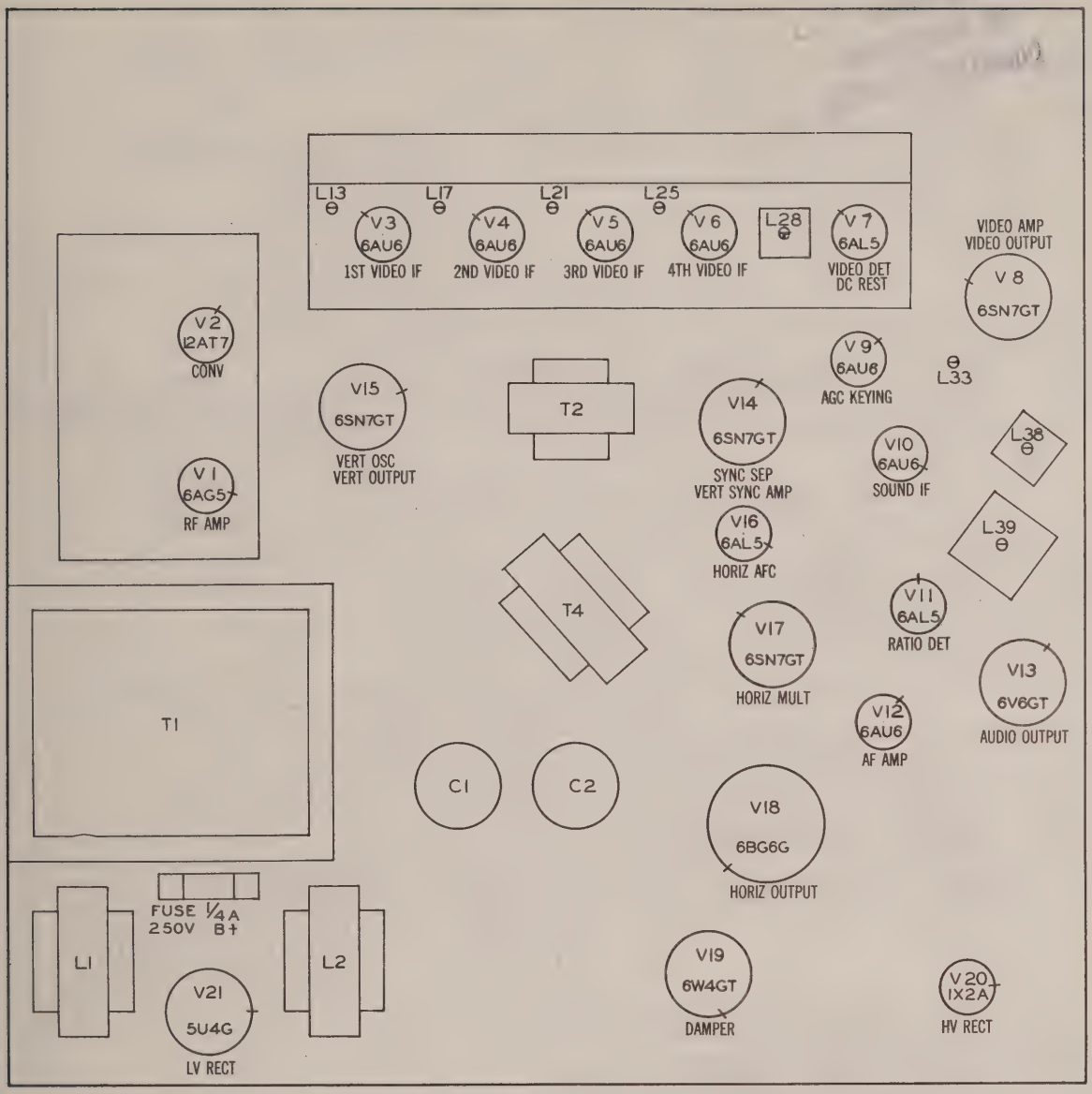


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No Raster, No Sound - V21, Fuse (M1)

LOSS OF PICTURE OR SOUND
No Pic, No Sound, Has Raster - V2, V3, V4, V5, V6, V7
No Pic, No Sound, Has Snow - V1, V2, V3
No Pic, Has Sound, Has Raster - V7, V8, V22
Has Pic, No Sound - V10, V11, V12, V13
Overloaded Picture - V9

SYNC FAILURE
No Vert. Sync - V14, V15
No Horiz. Sync - V14, V16, V17
No Vert. or Horiz. Sync.- V14

SWEEP FAILURE
No Raster, Has Sound - V17, V18, V19, V20, V22
No Vertical deflection - V15
Poor Vert. Linearity or Foldover - V15
Poor Horiz. Linearity or Foldover - V17, V18, V19
Narrow Picture - V17, V18, V19, V21
Vert. Off Freq. - V14, V15
Horiz. Off Freq. - V14, V16, V17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.
Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Tune to any point of non-interference in the high band channel.
Set the contrast control at maximum.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over Converter tube(V2). Low side to chassis.	26.35MC (unmod.)	See notes above.	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain approximately 1 volt reading at VTVM.
2.	"	"	23.7MC	"	"	A3, A4	"
3.	"	"	25MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	25 MC (10 MC Swp.)	23.3 MC 26.75 MC	See note under Video IF Align.	Vert. amp thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 1. Adjust A5 for flat top response. If necessary adjust A1 thru A5 for desired response curve and marker placement.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ(±1%) resistors in series from point (B) to B-. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001 Mfd.	High side to pin 1 (grid) of 6AU6 (V10). Low side to chassis.	4.5 MC (unmod.)	Any in high band.	DC probe to point (B). Common to Chassis.	A6, A7	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (C). Common to point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001 Mfd.	High side to pin 1 (grid) of 6AU6 (10). Low side to chassis.	4.5 MC (450 KC Swp.)	4.5 MC	Any in high band.	Vert amp to point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per Fig. 2.
6.	"	"	"	"	"	Vert. amp to point (C). Low side to chassis.	A8	Reconnect capacitor C8. Adjust so that 4.5 MC occurs at center of crossover lines as per Fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

RF TUNER ALIGNMENT

Preset the trimmers screws as shown in fig. 4.
Turn the tuner shaft to the top of its stroke in low band position.
Adjust all coil cores so the core projects 1.6 inches above the coil mounting strip.
Turn the core of L11 (low band oscillator) an additional four turns out of the coil.

LOW BAND ALIGNMENT

Turn the tuner to channel 6.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85 MC (10 MC swp)	83.25 MC 87.75 MC	6	Vert. amp thru 10KΩ to point (A). Low side to chassis.	A9, A10 A11	Adjust for maximum amplitude of response curve.
8.	"	"	"	"	"	"	A12	Adjust to place video marker at 50% on response curve as per Fig. 5.
9.	"	"	79 MC (10 MC swp.)	77.25 MC 81.75 MC	5	"		Adjust tuning control until response curve appears on scope with video marker at 50%. If necessary retouch A11 and A12 for compromise which will give the best overall response over the low band. If trimmer A10 reaches maximum capacity, turn L7 slug into coil.
			69 MC (10 MC swp.)	67.25 MC 71.75 MC	4			
			63 MC (10 MC swp.)	61.25 MC 65.75 MC	3			
			57 MC (10 MC swp.)	55.25 MC 59.75 MC	2			

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND ALIGNMENT

Turn the tuner to channel 13.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213 MC (10 MC swp.)	211.25 MC 215.75 MC	13	Vert amp. to point (A). Low side to chassis.	A13, A14 A15	Adjust for maximum amplitude of response curve.
11.	"	"	"	"	"	"	A16	Adjust to place video marker at 50% on response curve as per Fig. 5
12.	"	"	207 MC (10 MC swp.)	205.25 MC 209.75 MC	12			Adjust tuning control until response curve appears on scope with video marker at 50%. If necessary retouch A14 and A15 for compromise which will give the best overall response over the high band channels.
			201 MC (10 MC swp.)	199.25 MC 203.75 MC	11			
			195 MC (10 MC swp.)	193.25 MC 197.75 MC	10			
			189 MC (10 MC swp.)	187.25 MC 191.75 MC	9			
			183 MC (10 MC swp.)	181.25 MC 185.75 MC	8			
			177 MC (10 MC swp.)	175.25 MC 179.75 MC	7			

4.5 MC TRAP ADJUSTMENT

Tune in a TV station and adjust the tuning control until 4.5mc beat interference appears. Turn A17 fully counter clockwise then clockwise until the 4.5mc interference disappears.

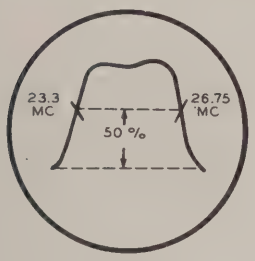


FIG. 1

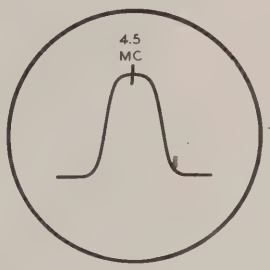


FIG. 2

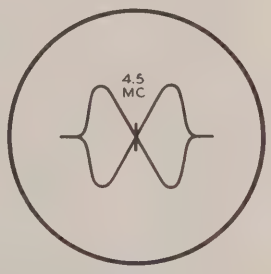
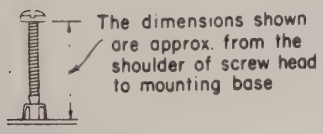


FIG. 3

ALIGNING TRIMMERS



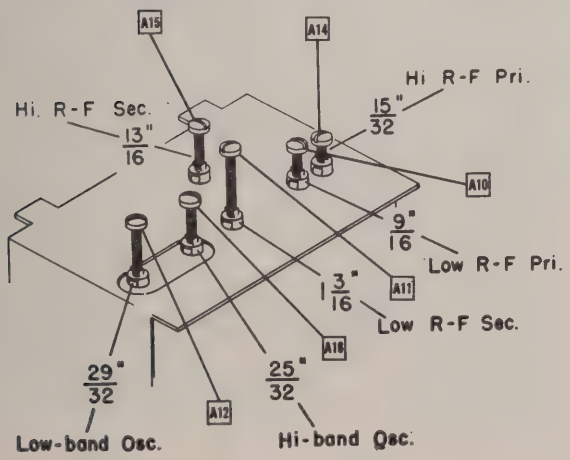


FIG. 4

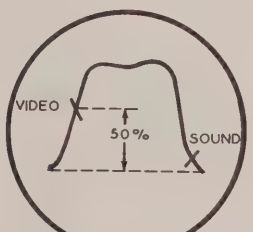


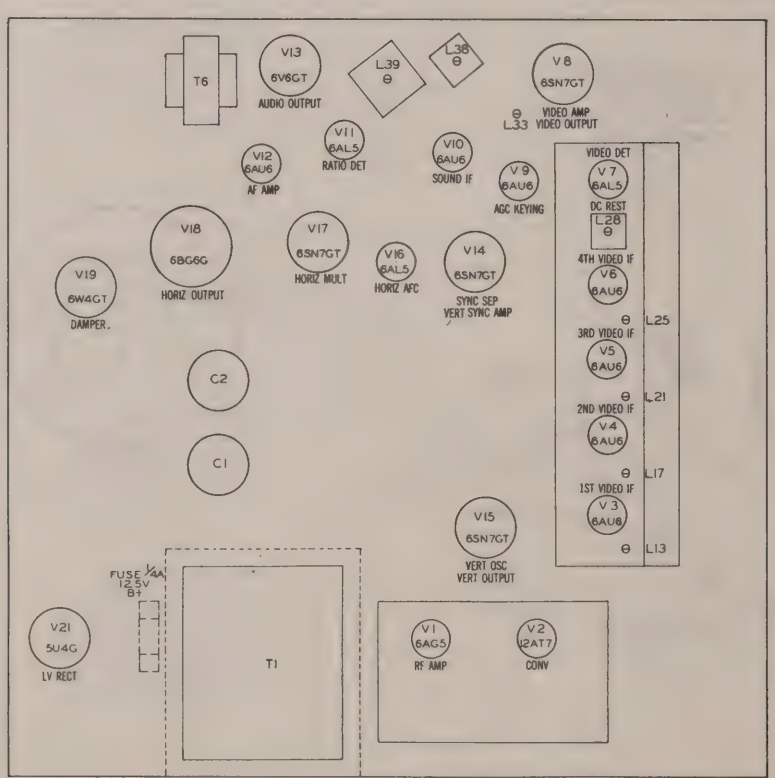
FIG. 5

TRUETONE MODEL 2D2219A

RESISTANCE MEASUREMENTS

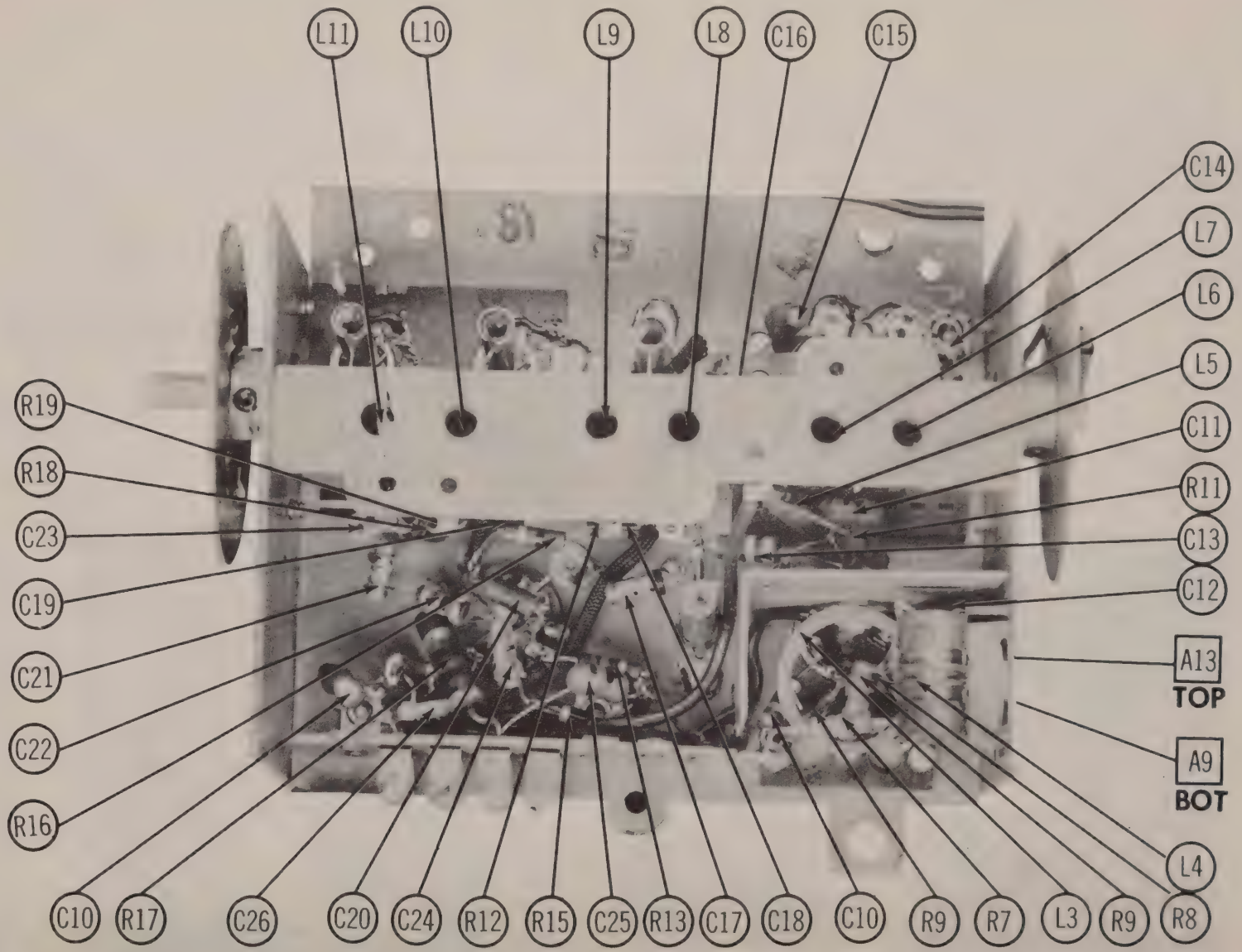
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	43KΩ	68Ω	.1Ω	0Ω	†2.8KΩ	†3.8KΩ	68Ω		
V 2	12AT7	†9.3KΩ	10KΩ	0Ω	0Ω	0Ω	†3.8KΩ	68KΩ –	1.2KΩ	.1Ω
V 3	6AU6	100KΩ	0Ω	0Ω	.1Ω	†3.8KΩ	†3.8KΩ	82Ω		
V 4	6AU6	100KΩ	0Ω	0Ω	.1Ω	†3.8KΩ	†3.8KΩ	82Ω		
V 5	6AU6	105KΩ	0Ω	0Ω	.2Ω	†3.8KΩ	†3.8KΩ	82Ω		
V 6	6AU6	2.3Ω	0Ω	0Ω	.3Ω	†5.7KΩ	†68KΩ	120Ω		
V 7	6AL5	.8Ω	0Ω	.4Ω	0Ω	1Meg	0Ω	3.9KΩ		
V 8	6SN7GT	3.9KΩ	†15KΩ	0Ω	470KΩ	†4.6KΩ	650Ω	0Ω	.1Ω	
V 9	6AU6	†25KΩ	†11KΩ	■0Ω	■.1Ω	90KΩ	†76Ω	†11KΩ		
V 10	6AU6	3.6Ω	0Ω	0Ω	.1Ω	†5KΩ	†5KΩ	120Ω		
V 11	6AL5	0Ω	22KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 12	6AU6	10Meg	0Ω	.1Ω	0Ω	†470KΩ	†1.8Meg	0Ω		
V 13	6V6GT	0Ω	0Ω	†1.5KΩ	†1.1KΩ	470KΩ	†76Ω	.1Ω	820Ω	
V 14	6SN7GT	4.7Meg	6.3KΩ	0Ω	2.2Meg	†47KΩ	0Ω	0Ω	.1Ω	
V 15	6SN7GT	1.5Meg	#1Meg	0Ω	1Meg	#700Ω	1.3KΩ	.1Ω	0Ω	
V 16	6AL5	2.2Meg	150KΩ	0Ω	..1Ω	2.2Meg	0Ω	4.5Meg		
V 17	6SN7GT	4.4Meg	†5.7KΩ	1.5KΩ	120KΩ	†270KΩ	1.5KΩ	0Ω	.1Ω	
V 18	6BG6G	INF	0Ω	0Ω	1Meg	1Meg	100KΩ	.1Ω	†4.8KΩ	TOP CAP #23 Ω
V 19	6W4GT	INF	INF	†3.7KΩ	#10Ω	†76Ω	#5Ω	■.1Ω	■0Ω	
V 20	1X2A	PINS 1 - 9 HAVE INF RESISTANCE								TOP CAP #195Ω
V 21	5U4G	INF	30KΩ	INF	29Ω	470KΩ	31Ω	470KΩ	30KΩ	
V 22	17BP4A	0Ω	1Meg	PIN 10 #1KΩ	PIN 11 120KΩ	PIN 12 .1Ω				

HI-LO SWITCH IN "LO" BAND POSITION
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V21.
■ MEASURED FROM 90 VDC LINE
MEASURED FROM PIN 3 OF V19



BOTTOM VIEW

TUBE PLACEMENT CHART


L11
L10
L9
L8
C16
C15
C14
L7
L6
L5
C11
R11
C13
C12
A13
TOP
A9
BOT
L4
R8
R9
L3
R7
R9
C10
C18
C17
R13
C25
R15
R12
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C10
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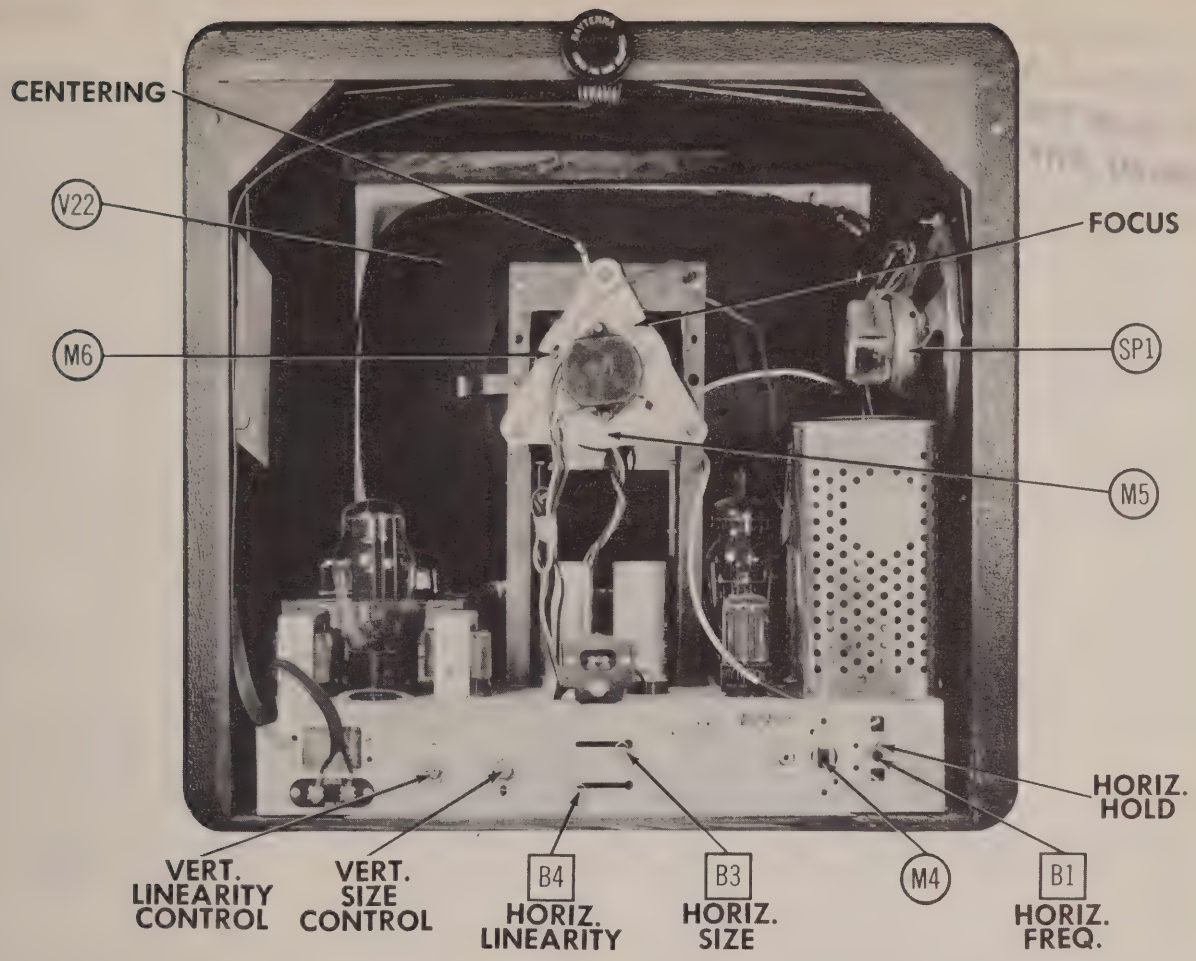
C22
C21
C19
C23
R18
R19

RF TUNER



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the contrast control at its normal operating position.

Turn the horizontal hold thumbscrew clockwise until it reaches its stop, then turn two complete turns counter-clockwise. This is mid-position of its range.

Adjust the horizontal hold (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise until bright vertical lines appear in the raster.

Turn B2 clockwise 1/8 turn past the point where the lines just disappear.

Adjust the horizontal size slug (B3) until the picture is slightly wider than enough to fill the mask horizontally.

Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right.

Adjustment of the horizontal drive trimmer will affect the horizontal size and linearity. Check the setting of B3 and B4 after adjustment of B2.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 3 screws. Remove rear cover.
3. Disconnect built-in antenna and speaker.
4. Remove 2 speaker nuts. Remove speaker.
5. Remove 5 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	12AT7	12AT7	9A	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector-DC Restorer	6AL5	6AL5	8BT	
V8	Video Amplifier-Video Output	6SN7GT	6SN7GT	8BD	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier	6AU6	6AU6	7BK	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Sync Separator Vert. Sync. Amp.	6SN7GT	6SN7GT	8BD	
V15	Vert. Oscillator Vert. Output	6SN7GT	6SN7GT	8BD	
V16	Horiz. AFC	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6BG6G	6BG6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20A	HV Rectifier	1X2A	1X2A	9Y	
B	HV Rectifier	1X2	1X2	9Y	
V21	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V22	17BP4A	17BP4A	12D	① Circuit changes necessary
		17BP4 ①	12D	
		17RP4 ①	12C	
		17RP4 ①	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	⌀30	450	8C-18487	AFH4-105		UPT409		FP237	TVL-2759	
B	⌀30	450						TC495	TVA-1207	
C	⌀125	25								
C2A	⌀60	450	8C-17845	AFH3-45		UPT36145		FP431.4	TVL-3790	
B	⌀10	450								
C	⌀30	450								
C3	20	150	8C-19546	PRS150/20		BR2015A		TC45	TVA-1410	
C4	8	450	8C-13453	PRS450/8		BR845A		TC71	TVA-1704	
C5	8	450	8C-13453	PRS450/8		BR845A		TC71	TVA-1704	
C6	5	450		PRS150/4		BR550		TC70	TVA-1303	Note 1
C7	10	150		PRS150/12		BR105		TC42	TVA-1304	Note 2
C8	10	75	8C-19564	PRS150/12		BR1015		TC42	TVA-1406	
C9	220		8G-16045	S1220	D6-221		GP2K-221	UC-5382	5GA-T22	
C10	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C11	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C12	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C13	.7		8G-12495-1		TCZ-.68		NP0K-R68			
C14	15		8G-13017		TCZ-15		NP0K-150		5TCC-Q15	
C15	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C16	1.7		8G-12495-8	S11.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C17	4		8G-19314				NP0K-040			
C18	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C19	2.2		8G-12495-4		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C20	1		8G-12495-2		TCZ-1		NP0K-010		5TCUB-V1	
C21	51		8G-13571		TCN-51		N750L-510			
C22	2.5		8G-19568				N330K-2R5			
C23	7		8G-19572				N220K-070			
C24	51		8G-13571		TCN-51		N750L-510			
C25	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C26	220		8G-16045	S1220	D6-221		GP2K-221	UC-5322	5GA-T22	
C27	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C28	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C29	100	500		1468-0001	D6-101	5WST1	GPIK-101	MC235	1FM-31	
C30	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C31	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	Note 5
C32	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C33	68	500		1469-00007	D6-680	5R5Q7	GPIK-680	MS-47	MS-47	Note 3
C34	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C35	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C36	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C37	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C38	68	500		1469-00007	D6-680	5R5Q7	GPIK-680	MS-47	MS-47	Note 3
C39	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C40	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C41	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	Note 5
C42	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	Note 6
C43	68	500		1469-00007	D6-680	5R5Q7	GPIK-680	MS-47	MS-47	Note 3
C44	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C45	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C46	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C47	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	Note 6
C48	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C49	1000		8G-13201	S11000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C50	5		8G-12495	S15NP0	TCZ-4.7		NP0K-050	ZT-555	5TCUB-V5	
C51	5		8G-13364	S11NP0	TCZ-4.7		NP0K-050	ZT-555	5TCUB-V5	
C52	100	500	8F1-113	1468-0001	D6-101	5WST1	GPIK-101	MC 235	1FM-31	
C53	100	500	8F1-113	1468-0001	D6-101	5WST1	GPIK-101	MC235	1FM-31	
C54	.05	400	8J-16081	P488-05	DF-503	PTE485		PT415	4TM-S5	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C55	.1	600	8J-16082	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C56	.1	200	8J-16085	P288-1	DF-104	PTE2P1		PT401	2TM-P1	
C57	3.3			813.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C58	.0022	400	8J-20634	P688-0022	D6-222	PTE6D22	GP2-333-222	PT622	6TM-D22	
C59	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C60	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C61	820	500	8F3-124							
C62	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C63	.01	400	8J-20582	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C64	.022	200	8J-16086	P488-022	DF-203	PTE4S22		PT412	4TM-S22	
C65	.01	200	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C66	.1	400	8J-16083	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C67	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C68	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C69	.0047	600	8J-20601	P688-0047	D6-472	PTE6D47	GP2-333-472	PT625	6TM-D47	
C70	470	500	8F3-131	1468-0005	D6-471	5WST5	GP2K-471	MC245	1FM-35	
C71	.1	200	8J-16085	P288-1	DF-104	PJE2P1		PT401	2TM-P1	
C72	.01	400	8J-16084	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C73	.0047	400	8J-20592	P688-0047	D6-472	PTE6D47	GP2-333-472	PT625	6TM-D47	
C74	.022	200	8J-16086	P488-022		PTE4S22			4TM-S22	
C75	.05	400	8J-16081	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C76	.22	400	8J-16095	P488-22		PTE4P22		TP429	4TM-P22	
C77	.1	600	8J-20607	P688-1	DF-104	PTE6P1		PT601	6TM-P1	Note 4
C78	.022	200	8J-16086	P488-022		PTE4S22			4TM-S22	
C79	.1	400	8J-20607	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C80	470	500	8F3-121	1468-0005	D6-471	5WST5	GP2K-471	MC245	1FM-35	
C81	220	500	8F3-117	1468-00025	D6-221	5WST25	GP2K-221	MC240	1FM-325	
C82	680	500	8F3-123	1479-0007		2R5T7			MS-37	
C83	680	500	8F3-123	1479-0007		2R5T7			MS-37	
C84	220	500	8F3-117	1468-00025	D6-221	5WST25	GP2K-221	MC240	1FM-325	
C85	820	500	8F6-124							
C86	.022	200	8J-16086	P488-022	DF-203	PTE4S22		PT412	4TM-S22	
C87	2000		8G-18049	S12000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C88	3900	500	8F11-132	1464-004		1DR5D4		MCB463		
C89	220	500	8F3-117	1469-00025		5R5T25		MCB240		
C90	330	500	8F3-119	1469-00035						
C91	.001	600	8J-19758	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C92	47		8G-18198	S147	D6-470	5W5Q5	GP1K-470	UC-5447	5GA-Q47	
C93	.1	600	8J-20607	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C94	5000		8G-13962	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C95	.15	200	8J-20585	P288-15		PTE4P15		TP417	2TM-P15	
C96	.022	200	8J-16086	P488-022		PTE4S22			4TM-S22	
C97	.150	1500	8G-19498			5WP15T5		MCK315	15GAB-T15	

Note 1. Some models use 50 V. unit in this application (Part #8C-20557)
Note 2. Some models use 50 V. unit in this application. (Part #8C-19918)
Note 3. Some models use 47MMF in this application . (Part #8F3-109)
Note 4. Some models use .047MFD in this application. (Part #8J-20601)
Note 5. Some models use 5000MMF in this application (Part #8G-13962)
Note 6. Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5000Ω	½	A-10A-18441	QJ-28*			UP53R	Contrast - Panel
B	1Meg	½					UR16-T1253	Volume - Tapped @ 100KΩ - Rear
C	Switch		Not Req.				US-28	Attach to R1B
R2A	50KΩ	½	A-10B17764	Q11-123	AG-44-8	AB-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	1Meg	½	A-10B19542	Q13-137	AG-63-Z	BSK-70	U-53	Tone -See note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R3A
R4A	100K	½	A-10B17275	Q11-128	AG-49-S	AB-40	U-41	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4A
R5A	5000Ω	½	A-10B19218	Q11-114	AG-19-S	AB-10	SV-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	750KΩ	½	A-10B19220	Q11-136	AG-61-S	AB-89		Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1		Attach to R6A

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-114 & P1-200 (Panel)
B18-137X & R2-218 (Rear) & SWITCH 76-2.
NOTE- Not used in all models.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES All resistors ±10% unless otherwise noted.
R7	470KΩ 20%	½	9B1-223	BTS-470K	Antenna Isolation
R8	680Ω	½	9B1-60	BTS-680	Low Band Antenna Coil Shunt
R9	10KΩ	½	9B1-74	BTS-10K	RF Amp. Grid
R10	68Ω	½	9B1-48		RF Amp. Cathode
R11	1000Ω 20%	½	9B1-13	BTS-1000	RF Amp. Screen
R12	5600Ω	½	9B1-71		Low Band Mixer Grid Coil Shunt
R13	68KΩ	½	9B1-84	BTS-68K	Mixer Grid
R14	1000Ω 20%	½	9B1-13	BTS-1000	Mixer Plate Decoupling - See Note 1
R15	1200Ω	½	9B1-83	BTS-1200	Mixer Cathode
R16	10KΩ	½	9B1-74	BTS-10K	Osc. Grid
R17	8200Ω	1	9B2-73		Osc. Plate
R18	10Ω	½	9B1-38		Parasitic Suppressor
R19	10Ω	½	9B1-38		Parasitic Suppressor
R20	1000Ω	½	9B1-62	BTS-1000	Decoupling
R21	1000Ω 20%	½	9B1-13	BTS-1000	AGC Network - See Note 1
R22	8200Ω	½	9B1-73		1st. Video IF Amp. Grid
R23	82Ω	½	9B1-49	BTS-82	1st. Video IF Amp. Cathode
R24	1000Ω 20%	½	9B1-13	BTS-1000	1st. Video IF Amp. Decoupling - See Note 1
R25	1000Ω 20%	½	9B1-13	BTS-1000	AGC Network - See Note 1
R26	6800Ω	½	9B1-72		2nd. Video IF Amp. Grid
R27	82Ω	½	9B1-49	BTS-82	2nd. Video IF Amp. Cathode
R28	1000Ω 20%	½	9B1-13	BTS-1000	2nd. Video IF Amp. Decoupling - See Note 1
R29	1000Ω 20%	½	9B1-13	BTS-1000	AGC Network - See Note 1
R30	12KΩ	½	9B1-75		3rd. Video IF Amp. Grid
R31	82Ω	½	9B1-49	BTS-82	3rd. Video IF Amp. Cathode
R32	1000Ω 20%	½	9B1-13	BTS-1000	3rd. Video IF Amp. Decoupling - See Note 1
R33	6800Ω	½	9B1-72	BTS-6800	4th. Video IF Coil Shunt
R34	120Ω	½	9B1-51	BTS-120	4th. Video IF Amp. Cathode
R35	12KΩ	½	9B1-75	BTS-12K	5th. Video IF Coil Shunt

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
R36	68KΩ	1	9B2-84	BTA-68K	4th. Video IF Amp. Screen
R37	5600Ω	½	9B1-71	BTS-5600	4th. Video IF Amp. Decoupling
R38	3900Ω	½	9B1-69	BTS-3900	Video Det. Diode Load
R39	10KΩ	½	9B1-74	BTS-10K	Isolation
R40	2200Ω	½	9B1-66	BTS-2200	Video Peaking
R41	10KΩ	½	9B1-74	BTS-10K	Video Peaking Coil Shunt
R42	1500Ω	½	9B1-64	BTS-1500	Video Amp. Plate
R43	470KΩ	½	9B1-94	BTS-470K	Video Output Grid
R44	4700Ω	½	9B1-70	BTS-4700	Video Output Cathode
R45	8200Ω	1	9B2-73	BTA-8200	Decoupling
R46	680Ω	½	9B1-72	BTS-6800	Video Peaking Coil Shunt
R47	3000Ω	2	9B4-170		Video Output Plate
R48A	1200Ω	5	9M-19995		Voltage Divider - Wire Wound
B	1500Ω	5			Voltage Divider - Wire Wound
R49	100KΩ	1	9B1-88	BTA-100K	Voltage Divider
R50	100KΩ	½	9B1-86	BTS-100K	Picture Tube Cathode
R51	22KΩ	½	9B1-78	BTS-22K	Picture Tube Grid
R52	1000Ω	½	9B1-62	BTS-1000	Acc. Anode Load
R53	1Meg	½	9B1-98	BTS-1Meg	DC Restorer Diode Load
R54	1000Ω	½	9B1-62	BTS-1000	Vert. Blanking Network
R55	15KΩ 20%	½	9B1-76	BTS-15K	Vert. Blanking Network
R56	120Ω	½	9B1-51	BTS-120	Sound IF Amp. Cathode
R57	2200Ω	½	9B1-66	BTS-2200	Sound IF Amp. Decoupling
R58	22KΩ	½	9B1-78	BTS-22K	De-Emphasis
R59	22KΩ	½	9B1-78	BTS-22K	Ratio Det. Diode Load
R60	47KΩ	½	9B1-82	BTS-47K	Tone Compensation
R61	10Meg 20%	½	9B1-37	BTS-10Meg	AF Amp. Grid
R62	1.8Meg	½	9B1-101	BTS-1.8Meg	AF Amp. Screen
R63	470KΩ	½	9B1-29	BTS-470K	AF Amp. Plate
R64	470KΩ 20%	½	9B1-29	BTS-470K	Output Grid
R65	820Ω	1	9B2-61	BTA-820	Output Cathode
R66	1000Ω	2	9B4-62	BTB-1000	Decoupling
R67	33KΩ	½	9B1-80	BTS-33K	AGC Network
R68	68KΩ	½	9B1-84	BTS-68K	AGC Network
R69	2200Ω	½	9B1-66	BTS-2200	AGC Filter
R70	4.7Meg	½	9B1-106	BTS-4.7Meg	Sync Separator Grid
R71	68KΩ	2	9B4-85	BTB-68K	Sync Separator Plate
R72	6800Ω	½	9B1-72	BTS-6800	Voltage Divider
R73	2.2Meg	½	9B1-102	BTS-2.2Meg	Vert. Sync Amp. Grid
R74	47KΩ	2	9B4-82	BTB-47K	Vert. Sync Amp. Plate
R75	47KΩ	½	9B1-82	BTS-47K	Integrator Network
R76	1.5Meg	½	9B1-100	BTS-1.5Meg	Vert. Osc. Grid
R77	47KΩ	½	9B1-82	BTS-47K	Voltage Divider
R78	390KΩ	½	9B1-93	BTS-390K	Voltage Divider
R79	3300Ω	½	9B1-68	BTS-3300	Vert. Peaking
R80	220KΩ	½	9B1-90	BTS-220K	Vert. Osc. Plate
R81	220KΩ	½	9B1-90	BTS-220K	Vert. Osc. Decoupling
R82	1000Ω	½	9B1-62	BTS-1000	Vert. Output DCathode
R83	1Meg	½	9B1-98	BTS-1Meg	Vert. Output Grid
R84	150KΩ	½	9B1-88	BTS-150K	Horiz. AFC Diode Load
R85	2.2Meg	½	9B1-102	BTS-2.2Meg	Horiz. AFC Diode Load
R86	2.2Meg	½	9B1-102	BTS-2.2Meg	Horiz. AFC Diode Load
R87	150KΩ	½	9B1-88	BTS-150K	Horiz. AFC Diode Load
R88	680KΩ	½	9B1-96	BTS-680K	Horiz. AFC Filter
R89	1Meg	½	9B1-98	BTS-1Meg	Horiz. Feedback
R90	68KΩ	½	9B1-84	BTS-68K	Horiz. Peaking
R91	1500Ω	½	9B1-64	BTS-1500	Horiz. MV Cathode
R92	5600Ω	1	9B2-71	BTA-5600	Horiz. MV Plate
R93	120KΩ	½	9B1-87	BTS-120K	Horiz. MV Grid
R94	270KΩ	½	9B1-91	BTS-270K	Horiz. MV Plate
R95	220Ω	½	9B1-54		Parasitic Suppressor
R96	1Meg	½	9B1-98	BTS-1Meg	Horiz. Output Grid
R97	4700Ω	1	9B2-70	BTA-4700	Horiz. Output Screen
R98	3600Ω	5	9C12-2061	1 3/4A-3500	Voltage Dropping - Wire Wound
R99	2.2Ω	½	9C1-1067		HV Rectifier Filament - Wire Wound - See Note 2
R100	470KΩ	½	9B1-94	BTS-470K	Line Isolation

Note 1. Some models use a RF choke in this application.
Note 2. Some models use a Fil. Choke in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ 1.9A	640VCT .250ADC	5VAC @ 3A	6.3VAC @ 1.5A SEC. 4 6.3VAC @ 7.2A	12A-18839 12A-18839-1 ①	P-8169	P-3059	TP-405	R-39BC

① Alternate Power Transformer.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	200Ω	1100Ω	B-12M-18241	A-8125	A-3000 ②	TBO-1 ②	A-97X	Vert. Osc. Trans.
T3	192Ω Tap @ 18Ω	8.3Ω Tap @ .5Ω SEC. 2 5.2Ω Tap @ 2.5Ω SEC. 3 0Ω	201-19817-3					Horiz. Output Trans.
T4	700Ω Tap @ 8.5Ω		B-12C-19048	A-8123 ②	A-3037	TSO-5	A-99X	Vert. Output Trans.
T5A	15Ω		201-19490-1	DY-8	MDF-70	TY-3	Y-12	Horiz. Deflection Coils
B	60Ω							Vert. Deflection Coils

② Drill one new mtg. hole.

TRUETONE MODEL 2D2219A

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T6	6.9KΩ	3Ω	480Ω	.9Ω	B12C-18743	A-3878	A-2931	RO-13 ②	S-7X	② Drill one new mtg. hole

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"	PM	3Ω	C-18A-19895	ST-108 Mod. P6-X	6A1	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.250A	38Ω	1.3Hy	B16A-17959	C-2326 ②	C-2991		C-23X
L2	.250A	38Ω	1.3Hy	B16A-17959	C-2326 ②	C-2991		C-23X

② Drill one new mtg. hole

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRUETONE PART No.	MERIT PART No.	
L3	Ant. Trans.	0Ω	0Ω	201-17143		
L4	Ant. Trans.	0Ω	0Ω	201-17143		
L5	RF Choke	0Ω		16A-17128		
L6	RF Coil Pri.	0Ω		13E-17140		High Band
L7	RF Coil Pri.	0Ω		13E-12046		Low Band
L8	RF Coil Sec.	0Ω		13E-17140		High Band
L9	RF Coil Sec.	0Ω		13E-12046		Low Band
L10	Osc. Coil	0Ω		13E-17140		High Band
L11	Osc. Coil	0Ω		13D-12155		Low Band
L12	RF Choke	10Ω		16A-18025		
L13	1st. Video IF	.3Ω		13M-19521	TV-112	
L14	RF Choke					1KΩ resistor may be used in this application.
L15	RF Choke					1KΩ resistor may be used in this application.
L16	Fil. Choke	.2Ω		201-15608		
L17	2nd. Video IF	.1Ω		201-15612	TV-103	
L18	RF Choke					1KΩ resistor may be used in this application.
L19	RF Choke					1KΩ resistor may be used in this application.
L20	Fil. Choke	.2Ω		16A-17937		
L21	3rd. Video IF	.2Ω		201-15652	TV-102	
L22	RF Choke					1KΩ resistor may be used in this application.
L23	RF Choke					1KΩ resistor may be used in this application.
L24	Fil. Choke	.2Ω		16A-17937		
L25	4th. Video IF	.1Ω		201-15652	TV-103	
L26	RF Choke					1KΩ resistor may be used in this application
L27	RF Choke	2.3Ω		201-15608		
L28	5th. Video IF	.8Ω	.8Ω	13B-19958		
L29	Fil. Choke	0Ω		16A-17937		
L30	RF Choke	0Ω		16A-17937		
L31	RF Choke	2.2Ω		201-15608		
L32	RF Choke	2.2Ω		16A-17937		
L33	4.5MC Trap	1.4Ω		201-20696		
L34	Peaking Coil	5.5Ω		16A-20021		130 Microhenries, Green Dot
L35	Peaking Coil	7Ω		16A-19485	TV-185	240 Microhenries, White Dot
L36	Peaking Coil	5.5Ω		16A-20020	TV-184	155 Microhenries, Yellow Dot
L37	Peaking Coil	7Ω		16A-19485		240 Microhenries, White Dot
L38	Sound IF	3.6Ω		13A-19514		
L39	RAtio Det.	6Ω	.7ΩCT.	13M-19643		Tertiary Winding .6Ω
L40	Horiz. Osc.	75Ω		13D-19540	TV-163	
L41	Horiz. Size	.5Ω		13M-18233		
L42	Horiz. Lin.	5.5Ω		201-20186		Tap ② 3.6Ω
L43	Fil. Choke	2.2Ω				2.2Ω resistor used in some application.

FUSES

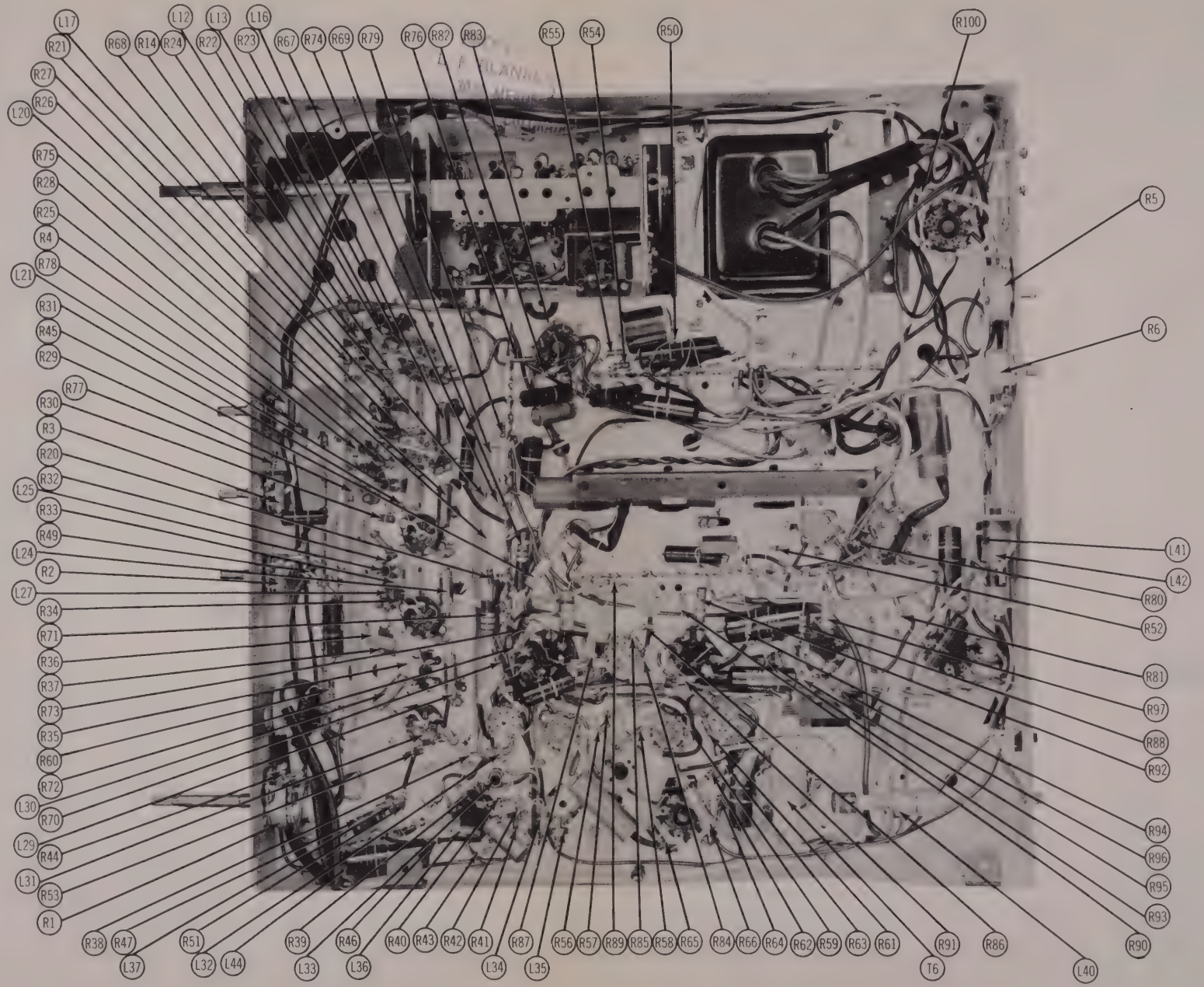
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG Slo-Blo	1/4 A. 125 V.			313.250	350126	MDL-4/10	4405

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS	BEAD COLOR	REPLACEMENT DATA		NOTES
					TRUETONE PART No.		
M2	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

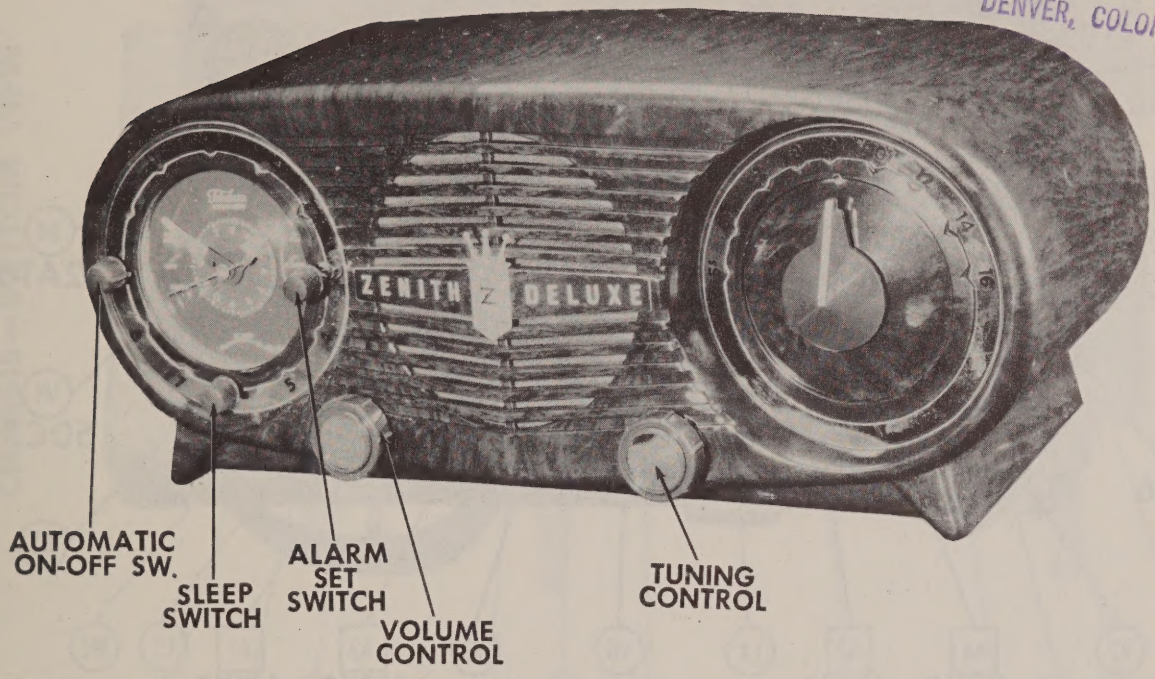
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	RF Tuner		
M4	Switch		TV-Phono
M5A	Focus Magnet	55P-19800-1	
B	Focus Magnet	55P-20068	Alternate
M6	Ion Trap	16M-19906	
B2	Trimmer	8E-18508	Horiz. Drive (80-480MMF)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ZENITH
MODEL J616 (Ch. 6J03)



ZENITH
MODEL J616 (Ch. 6J03)

TRADE NAME	Zenith Model J616 (Ch. 6J03)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave. Chicago, Ill.
TYPE SET	AC Operated Superheterodyne Receiver With Electric Clock
TUBES(SIX)	Types 6BJ6 RF Amp., 12BE6 Conv., 6BJ6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier.
POWER SUPPLY	110-120- Volts AC
RATING	.270 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdeiver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1Mfd	High side to pin 7 (grid) of 12BE6 (V2) Low side to B-	455KC (400~ Mod.)	600KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	Tuning gang fully open	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6, A7	"

With receiver aligned and installed in cabinet, turn tuning gang fully closed and set pointer parallel with base of cabinet at low frequency end of the dial.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BJ6	6BJ6	7CM	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	6BJ6	6BJ6	7CM	
V4	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Audio Output	50C5	50C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	22-2351	AFH3-10		UP8415		FP216	TVL-3440	
B	▲40	150								
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	10000		22-3	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C4	470		22-6	SI470	D6-471	5W5T5	GP2K-471	UC-5347	5GA-T47	Note 1
C5	10000		22-3	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	Note 1
C6	.01	400	22-1182	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	10000		22-3	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C8	.05	200	22-829	P288-05		PJ2S5		PT415	2TM-S5	

Note 1. Some models combine C4, C5, R9, R10 in one unit. (part no.105-27)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	63-2393	Q11-133	AG-58-S	AB-59	U-50	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R2	330Ω	½	63-1765	BTS-330	RF Amp. Cathode
R3	15KΩ	½	63-1835	BTS-15K	RF Amp. Plate
R4	1000Ω	½	63-1786		Parasitic Suppressor
R5	22KΩ	½	63-1842	BTS-22K	Osc. Grid
R6	68Ω	½	63-1737		IF Amp. Cathode
R7	2.2 Meg.	½	64-1926	BTS-2.2Meg.	AVC Network
R8	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	AFAmp Grid
R9	470KΩ	½	63-1898	BTS-470K	AF Amp Plate -See Note 1
R10	470KΩ	½	63-1898	BTS-470K	Output Grid-See Note 1
R11	150Ω	1	63-1977	BTA-150	Output Cathode
R12	1000Ω	1	63-965	BTA-1000	Filter
R13	22Ω	1	64-1450		Surge Limiter-Wire Wound

Note 1 Some models combine R9, R10, C4, C5, in one unit (part No. 105-27)

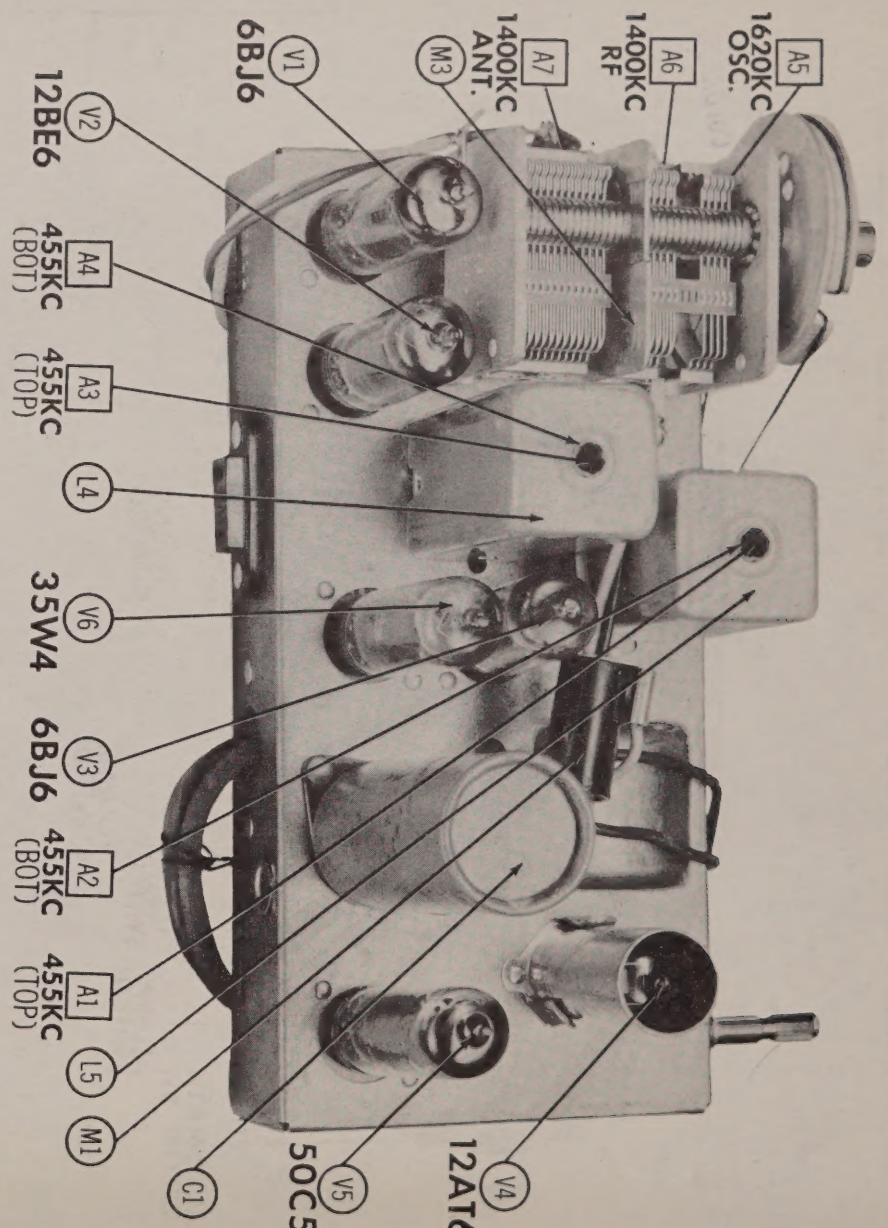
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.6KΩ	3.3Ω	193Ω tap ⓐ 6Ω	.64Ω	95CZ1293		A-3031 ①	RO-3①	S-1X①	① Drill one new mtg hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.3Ω	49CZ713	ST-113 Mod. P4-X	4A07	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

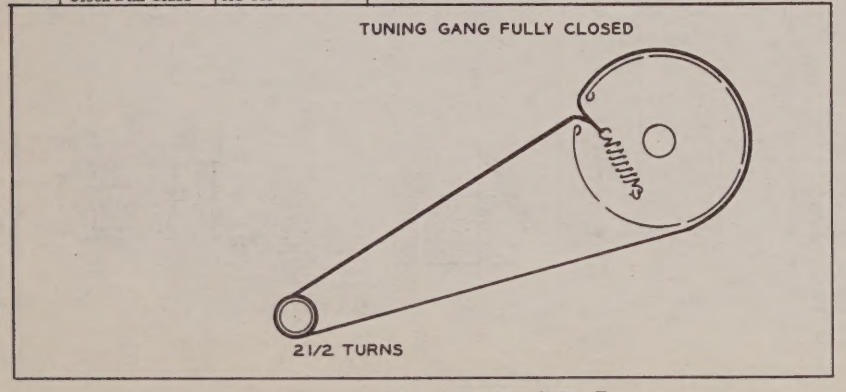
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MERIT PART No.	NOTES
L1	Loop Ant.	2.3Ω		S-18535		
L2	RF Coil	3.1Ω	11Ω	S-18500		Tap@ 5Ω
L3	Osc. Coil	.5Ω	9.5Ω	S-18501		
L4	Input IF	15.5Ω	15.5Ω	95-1101	BC-368	
L5	Output IF	15.5Ω	15.5Ω	95-1102	BC-376	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8	.15	Brown	78-942		Type No. #47

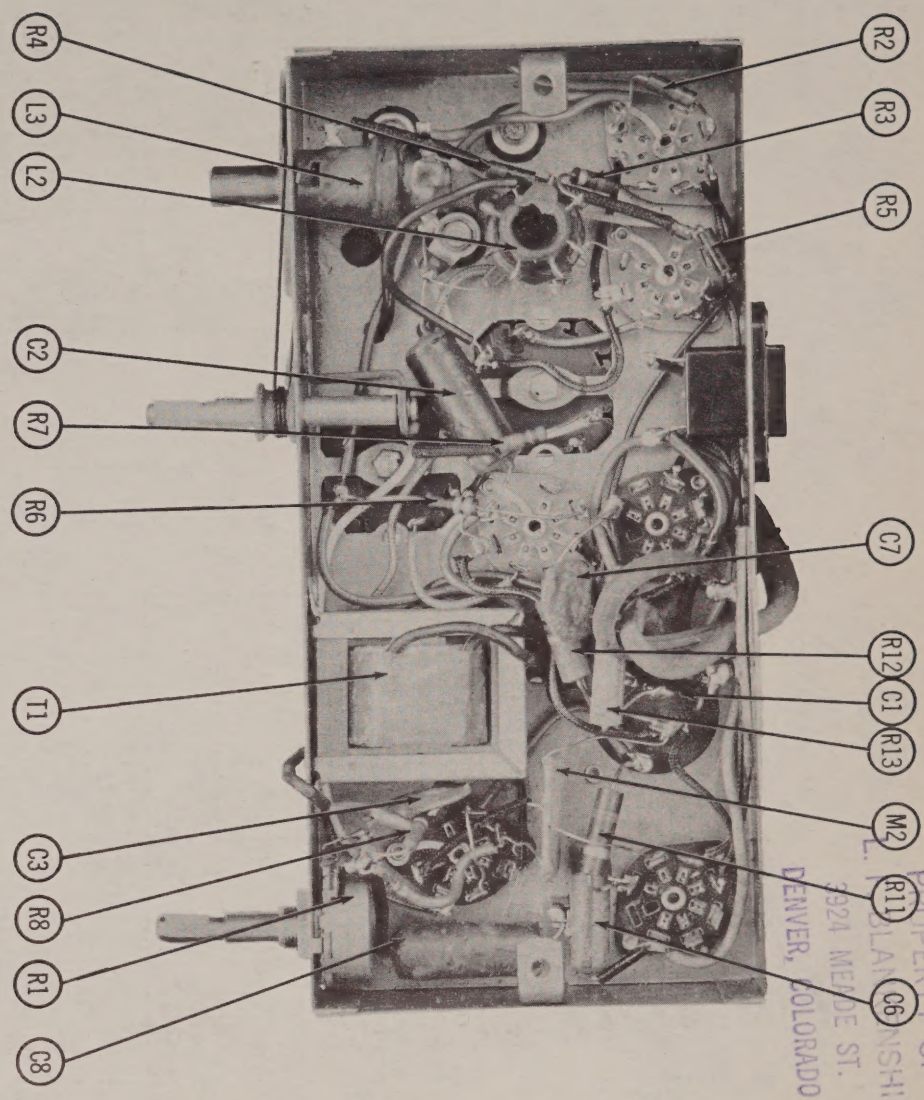
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	C-R Unit	105-27	Not used in all models
M3	3 Gang Var. Cap.	22-2352	(35-477MMF, 17-232MMF, 14-152MMF)
	Cabinet	14-1356	Black
	Cabinet	14-1369	White
	Cabinet	14-1370	Walnut
	Cabinet	14-1400	Bisque
	Cabinet	14-1415	Grey
	Knob	46-905	Clock Controls-Black(3 used)
	Knob	46-940	Clock Contrlls-White(3 used)
	Knob	46-904	Clock Controls-Walnut(3 used)
	Knob	46-970	Clock Controls-Bisque(3 used)
	Knob	46-948	Clock Controls-Grey(3 used)
	Knob	46-941	Vol. & Tuning-Black
	Knob	46-942	Vol. & Tuning-White
	Knob	46-943	Vol. & Tuning- Walnut
	Knob	46-971	Vol. & Tuning-Bisque
	Knob	46-949	Vol. & Tuning-Grey
	Dial Scale	26-466	
	Pointer	59-265	
	Clock Dial Glass	192-145	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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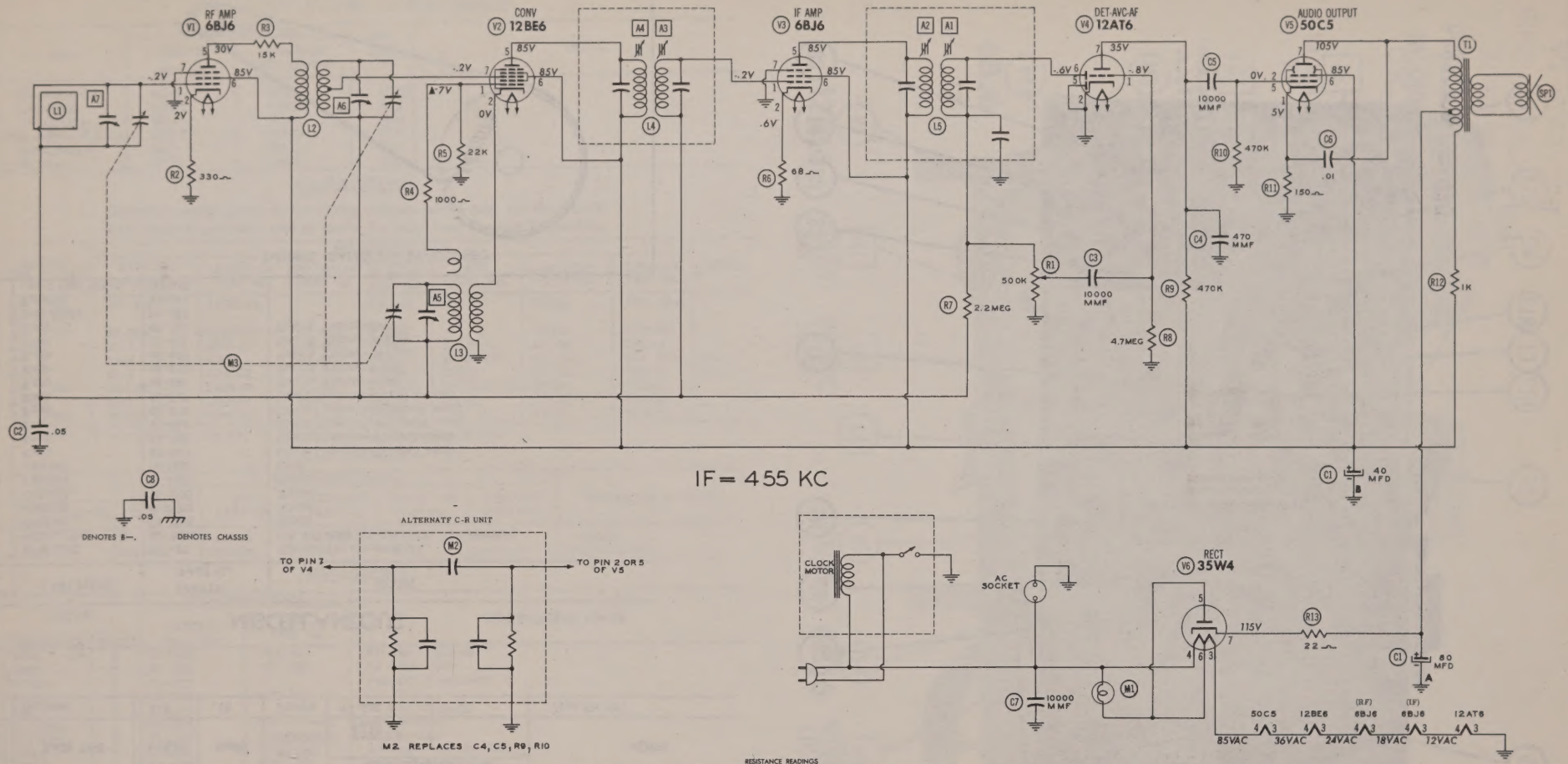
ZENITH
MODEL J616 (Ch. 6J03)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BJ6	2.7 Meg	330Ω	18Ω	24Ω	†16KΩ	†1KΩ	0Ω
V 2	12BE6	22KΩ	.5Ω	24Ω	36Ω	†1KΩ	†1KΩ	2.7Meg
V 3	6BJ6	2.7 Meg	68Ω	12Ω	18Ω	†1KΩ	†1KΩ	0Ω
V 4	12AT6	4.7Meg	0Ω	0Ω	12Ω	0Ω	500KΩ	†470KΩ
V 5	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†1KΩ	†215Ω
V 6	35W4	†28Ω	INF	88Ω	121Ω	103Ω	103Ω	40KΩ

MEASURED FROM PIN 7 OF V6.
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.